ONTARIO PARKS

Kawartha Highlands

Signature Site

Management Plan
Background Information

Ontario

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Approval Statement

I am pleased to approve the **Kawartha Highlands Signature Site Park** ***Background Information*** document as part of the first stage of the management planning process for the park. This document contains information about the park's natural, cultural and recreational features. Preliminary identification of topics to be addressed during this park management planning process are summarized and, following public review of this *Background Information* document, a *Management Options* document will be prepared for the next stage of the planning process.

I encourage all interested parties to participate in the preparation of the Kawartha Highlands Signature Site Park Management Plan.

Zone Manager, Southeastern Zone
Ontario Parks

September 22, 2005

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Vision Statement

Our vision for the Kawartha Highlands Signature Site is that of a legacy of protection and stewardship, ensuring that the semi-wilderness characteristics are preserved.

The protection of the ecological integrity of the area is of paramount importance. Long-term protection of both natural and cultural heritage values is required for the preservation of this unique area. Careful management is required to protect the environmentally sensitive aspects of the area, and to maintain it for the benefit of future generations.

Traditional activities, including cottaging, will continue to be integral components of the area, and diverse low-density recreational opportunities will continue to be available.

Continued public involvement in the planning and management of this area is essential. Management of the area will respect the existing private lands and tenure within the park.

from the Kawartha Highlands Signature Site Charter (OMNR 2003)

1.0 INTRODUCTION

Characteristic topography of the Kawartha Highlands

The Kawartha Highlands Signature Site is the most southern of the nine Signature Sites that were identified in the July 1999 Ontario's Living Legacy Land Use Strategy. Located 50 km north of Peterborough, the site contains a range of natural and recreational values, and related management issues. Situated along the southern edge of the Canadian Shield, this relatively undeveloped area encompasses 37,587 ha and features a rugged rolling landscape of small lakes, wetlands, forests and rocky barrens. The Kawartha Highlands Signature Site is now the largest park in Ontario south of Algonquin Provincial Park.

The purpose of this document is to provide the pertinent background information for all who will be involved in the management planning process for the Kawartha Highlands Signature Site Park (referenced throughout this document as "Kawartha Highlands"). Over the past several years, much new information has been gathered to support management planning. Excerpts from these studies will be presented directly, so as to provide the best information available for park management planning. The public and aboriginal communities are encouraged to provide any further information that will assist us in building on this information base.

1.1 Planning History

The natural and recreational values of the Kawartha Highlands area have been recognized for decades; however, the decision to formally protect this area originated with the provincial "Lands for Life" Crown land use planning exercise which took place from 1997 to 1999. Three citizens' Round Tables, established in the Boreal West, Boreal East and Great Lakes-St. Lawrence planning regions, undertook extensive consultations starting in June 1997 and provided recommendations to the Ministry of Natural Resources (MNR) in July 1998. The Kawartha Highlands is in the Great Lakes-St. Lawrence planning region.

During Lands for Life, the Great Lakes-St. Lawrence Round Table considered and presented several land use planning options for new protected areas. In the Kawartha Highlands area, their recommended option included the opportunity to protect two key natural areas:

- the Bottle Creek Area of Natural and Scientific Interest (ANSI), and
- the Long Lake Barrens ANSI.

They also recommended that a much larger area surrounding these two protected areas be an Enhanced Management Area – a new land use category that was established to provide more detailed land use direction for Crown lands in areas with special features or values.

On the local front, the Burleigh Anstruther Chandos Cottagers Association (now the North Kawartha Lakes Association) learned of this consultation process and approached the municipality (now the Township of North Kawartha, where two-thirds of the Signature Site lies) to take the lead and help organize other interested stakeholders. The municipality agreed to coordinate public meetings and the Township of Galway-Cavendish and Harvey (where one-third of the protected area lies) participated as a stakeholder. By the summer of 1998, this group had prepared input for the Lands for Life process reflecting the consensus of a diversity of local stakeholders.

Following the scheduled Round Table public meetings, a contingency meeting was arranged so the stakeholders could present submissions, which included the proposal of protecting a much larger area than was contained in any of the Round Table options. Unfortunately, the submissions were received late in the process when the Round Table was finalizing its recommendations for MNR; these submissions were provided to MNR as additional input.

In July 1999, following the public review of the Round Table's draft recommendations and after a review process involving key provincial resource industry and environmental stakeholder groups, the government released Ontario's Living Legacy Land Use Strategy (LUS). The LUS identified 378 new protected areas, including nine very special "Featured Areas" – now known as Signature Sites. Each of the featured areas represented significant natural heritage and recreational landscapes and values – each requiring special and unique approaches to planning and management.

The LUS set out the government's intention to establish the Kawartha Highlands Signature Site as the largest protected area south of Algonquin Provincial Park. The additional input provided by the local stakeholders had been accepted by the government and incorporated into the Strategy. The local stakeholders' support for protecting the natural and recreational values of the Kawartha Highlands area was a key factor in this site being elevated to Signature Site status.

As previous stakeholder submissions regarding the Kawartha Highlands did not show consensus on the appropriate protection designation for the area, the government made the decision to determine this through the continued involvement of local stakeholders.

In July 2000 a Local Stakeholder Committee (LSC) was established to make recommendations to the Minister of Natural Resources on guidelines for land use, the appropriate protection designation (i.e., regulation of the area as a provincial park, a conservation reserve or some combination of these), and possible boundary refinements. The 12 member Committee was made up of a diversity of individuals who represented the variety of interests associated with the Kawartha Highlands. Prior to making their recommendations in November 2001, the LSC offered substantial opportunities for public

involvement and consultation. Details of the LSC undertakings and recommendations can be found on the Kawartha Highlands Signature Site Park website (*http://www.ontarioparks.com/english/kawa.html*).

With unanimous consensus, the Committee recommended that the area be protected as a provincial park and stressed that it needed to be actively managed as an "operating" park. The LSC also recommended that planned activities be enshrined in special legislation to alleviate concerns of some stakeholders that traditional activities would be discontinued. In total, the LSC made 47 recommendations: 1 with several sub-recommendations related to designation, 25 related to permitted activities, 13 related to boundary refinements and 8 related to future stewardship of the Kawartha Highlands (Local Stakeholder Committee, 2001).

In December 2002, based on some concerns expressed by the public, the Minister of Natural Resources introduced the *Recreation Reserve Act* (Bill 239) for First Reading. Bill 239 was intended to provide a new protected area designation and was to be applied to the Kawartha Highlands Signature Site. This provided greater assurances for traditional users of the area and allowed for a diverse range of recreational activities to occur. In March 2003, the Legislature was prorogued and this Bill ceased to exist. The proposed *Recreation Reserve Act* evoked strong opinions from key stakeholders. Many groups and individuals supported the Bill because of its protection for traditional activities, while many others viewed this proposal as much too weak on the protection of natural heritage values. It was clear from the public comments received in response to the Environmental Registry website posting for the *Recreation Reserve Act* and the debate that continued after the comment period ended, that further discussion was required to find a broadly acceptable solution for the Kawartha Highlands.

On March 18, 2003, the local MPP for Haliburton on behalf of the government undertook a focussed discussion with groups that represented a broad range of perspectives in order to reach a general agreement for the future of this site (Local Stakeholder Committee, Ontario Federation of Anglers and Hunters, Partnership for Public Lands and Stakeholder Groups of the Kawartha Highlands). The results of the discussions were documented in a Charter, outlining a broad framework for the management of the area and the proposed text for legislation related specifically to the Kawartha Highlands.

The *Kawartha Highlands Signature Site Park Act, 2003* (*KHSSP Act*) establishes the primacy of protecting the ecological integrity of the park, protects traditional non-industrial activities, provides private property assurances and establishes a Management Advisory Board that will have a substantial role in management planning and implementation. This Act is based substantially on the recommendations provided to the Minister from the Local Stakeholder Committee, with further inclusions to address other stakeholder concerns.

The Kawartha Highlands Signature Site Charter, 2003 (the Charter) (OMNR, 2003) established the intent of the Ministry of Natural Resources (MNR) to manage this area as an operating natural environment class provincial park. The Kawartha Highlands Signature Site Park will be managed under the provisions of the *KHSSP Act*. The *KHSSP Act* outlines site-specific policy and operational direction for the Kawartha Highlands and incorporates the provisions of the *Provincial Parks Act*. Where the *KHSSP Act* is silent, the *Provincial Parks Act* will apply.

Key components of sound planning for the future of this park are continued public input, stakeholder involvement and Aboriginal community participation. The management planning process is designed to encourage and incorporate input, review and comment from a wide cross-section of people such as Aboriginal community representatives, adjacent private landowners, environmentalists, business and industry representatives and recreational users. A Management Advisory Board (MAB), established in August 2003 under Section 5 of the *KHSSP Act*, will provide on-going planning and management advice to the Minister of Natural Resources as a key component of the MNR's commitment to ongoing public involvement.

1.2 Planning Team and Schedule

Preparation of the Kawartha Highlands Signature Site Park Management Plan is the responsibility of a multi-disciplinary team consisting of MNR staff from Ontario Parks and Bancroft District, as well as the Kawartha Highlands Signature Site Park Management Advisory Board. As required, advice or support will be encouraged and/or sought from the general public, Aboriginal communities, stakeholder groups, non-government organizations and academic experts. The roles and responsibilities for the team have been outlined in the Terms of Reference document (*http://www.ontarioparks. com/english/kawa.html*).

The Signature Site Park management planning process will follow the Ontario Provincial Park Management Planning Manual (1994) and will be adapted specifically for the Kawartha Highlands to ensure that the planning process meets the expectations of the stakeholders involved to date (a "made in Kawarthas" process). This initiative will build on existing resource management direction found in the *KHSSP Act* and Charter. The major steps in the management planning process and their tentative completion dates, along with the consultation components, are outlined in the Terms of Reference document. The process is intended to guide the project to the completion of an approved park management plan for Kawartha Highlands. The planning schedule reflects the significant interest in all Kawartha Highlands consultations to date and resulted extending the timeframe requirements for receiving comments during the review stages for both the management options document and the preliminary park management plan.

2.0 PLANNING AREA

In 1999, the Ministry of Natural Resources commissioned a "Kawartha Highlands Background Information Report" (van der Meer, 2000). This report was prepared for the use of the Local Stakeholder Committee, presenting information that was pertinent for developing recommendations for the area. Since the time of the report preparation, much new information has been gathered and information in this Background Information document represents the most current information available. Excerpts from the original report have been adapted for this report where information remained the same or required only minor modifications. This section contains adaptations from the original report.

2.1 Regional Setting *(refer to Figure 1)*

The Kawartha Highlands straddles the four geographic townships of Cavendish, Harvey, Burleigh and Anstruther, in the north half of Peterborough County. Northern Peterborough County has a mixed landscape of forested areas, bedrock hills and lakes where little agricultural capability exists.

The broad region around the Kawartha Highlands (northern portions of Peterborough County, City of Kawartha Lakes, Hastings County, and Haliburton County) is the southern edge of the Canadian Shield. The typical landscape of this area is one of rugged wooded hills and valleys, and many lakes and wetlands. Regional topography varies from slightly broken rolling land to steep cliffs and deep valleys. Soils are generally shallow, with areas where bare bedrock shows through.

Southern Peterborough County is predominantly rolling farmland. The abrupt change from south to north occurs at the edge of the Canadian Shield. The Kawartha Lakes, part of the Trent-Severn Waterway, provide a physical separation between the two distinctly different sections of the County.

The City of Peterborough is the nearest major regional centre to the Kawartha Highlands. Less than 50 km from the south boundary of the park, it is a centre of manufacturing, education (Trent University, Sir Sanford Fleming College), and government offices. It is the service and market area for a large surrounding agricultural region.

The Town of Lindsay, also on the Trent Severn waterway, is the next largest community close to the Kawartha Highlands (53 km via County Road 36). Lindsay has a strong base of small industry and manufacturing companies.

Minden to the northwest, Haliburton to the north, Bancroft to the northeast, Lakefield and Bridgenorth to the south and Bobcaygeon to the southwest all possess year-round services and facilities, and are located between 30 and 60 km from the boundary of the Kawartha Highlands.

Immediately adjacent to the Kawartha Highlands are the communities and hamlets of Buckhorn, Burleigh Falls, Big Cedar, Woodview, Haultain, Apsley, Gooderham and Catchacoma. These are located on Highways and County Roads, once early settlement or colonization roads, and are remnants of what was once a thriving part of the lumber or mining industries. Many of these communities have changed substantially in the last century and have become service centres for local tourism and cottaging.

The close proximity of this site to the Greater Toronto Area (just over 200 km from downtown Toronto to the centre of the Kawartha Highlands on Anstruther Lake Road) makes the area readily accessible to the largest population centre in Canada.

2.2 Access *(refer to Figures 1 & 2)*

A network of provincial highways and county roads provide convenient access to the area.

Most visitors to the area coming from the south use Highways 401, 115/35, and 28 as the primary route to the southeast corner of the area (Burleigh Falls) and then reach their specific destination in the park via Highway 28 on the east, County Road 36 on the south, and County Road 507 on the west. There is no major road across the northern boundary of the area, but Highway 118 and County Road 503 form a link from the northeast at Paudash (just south of Bancroft), through Tory Hill, to the northwest at Gooderham. A network of roads provides adequate access to the area from most directions.

The largest airport providing access to the Region is located near Peterborough, approximately 50 km away. Lindsay also has an airport and there are small community or private airfields in the area, near Bancroft and Haliburton, as well as some plane access to lakes adjacent to and within the Kawartha Highlands.

The Trent–Severn Waterway passes through the Kawartha Lakes just south of the Kawartha Highlands. It is used primarily for cottage-originating recreation traffic, but also by boaters travelling through the system. There is no navigable water connection from the Kawartha Lakes and the Trent–Severn system to the Kawartha Highlands, other than tough upstream canoe routes on the Mississagua River and Eels Creek, nor is there navigable access from the north.

A number of roads, most of which began as cottage roads, reach into the Kawartha Highlands providing vehicle access to groups of cottages that were formerly accessible only by water.

Access from the west

Pencil Lake, on the northwest corner of the Kawartha Highlands, has road access to its north end via the Pencil Lake Road from County Road 507. The approximately 1.2 km stretch to the boat launching area is maintained year round. Beyond that, the road provides seasonal access for cottagers. Further on, the Pencil Lake Road becomes the Pencil Lake Forest Access Road, which is not suitable for normal passenger vehicles but does provide a west/east connection just north of the Kawartha Highlands. On the east it joins the municipally maintained West Eels Lake Road and Eels Lake Road, connecting to Highway 28.

Beaver Lake Road extends eastward for 10 km from County Road 507, travelling between Catchacoma Lake and Mississagua Lake, and crossing the narrows between these lakes. It then heads between Beaver Lake and Gold Lake (with seasonal spur roads providing additional cottage access) and then curves around to the north side of Beaver Lake. This section is municipally maintained as a year round road. An additional 1.5 km of seasonal road (North McGinnis Lake Road) continues to the east side of Catchacoma Lake.

Anstruther Marina provides cottagers with access to Anstruther Lake.

The Gold Lake Road exits from the Beaver Lake Road about 5.5 km from County Road 507, and provides seasonal cottage access to Gold Lake (2 km, with spur roads) and the west arm of Anstruther Lake (2.5 km).

The Mississagua Lake Road is a year round road (about 1.5 km, with seasonal spurs) which exits the Beaver Lake Road about 2 km from County Road 507 to provide access to the properties on the north side of Mississagua Lake.

At the south end of Mississagua Lake, the Mississagua Dam Road provides access to the control dam at the outflow of the lake as well as a boat launching area, and to properties along the south side of the lake. This road is municipally maintained year round for about 2.5 km. Just 0.8 km from County Road 507, a spur road crosses the Mississagua River, and provides the Mississagua and Gold Lake cottagers' with access to the southeast side of Mississagua Lake and the south side of Gold Lake.

Access from the south

Below the south boundary of the Kawartha Highlands, roads provide access from Highway 28 to Coon Lake and Big Cedar Lake, where there is access to canoe routes located in the Burleigh township portion of the area. These roads do not extend into the Kawartha Highlands.

Access from the east

Long Lake Road provides access from Highway 28 to the east end of Long Lake. From here, cottage access is primarily by water travel. This municipal road is approximately 2 km long.

Table 1: Access Points (Formal and Informal)

Access Point		Access Point	
Access Point #1	Military Bridge	Access Point #16	Anstruther Lake Public Access
Access Point #2	Mississagua River	Access Point #17	Anstruther Marina
Access Point #3	Mississagua Lake Dam	Access Point #18	Long Lake Lodge
Access Point #4	Trapper's Inn	Access Point #19	MTO/Eels Creek Access
[Note: Trapper's Inn no longer exists; property has since been subdivided for private residences.]		Access Point #20	Coon Lake
Access Point #5	West Bay Road	Access Point #21	Deer Bay Creek
Access Point #6	Little Gull Marina	Access Point #22	Highway 36, Lower Buckhorn, Mississagua River
Access Point #7	Catchacoma Narrows	Access Point #23	Catchacoma Trailer Park and Marina
Access Point #8	Gold Lake Narrows		
Access Point #9	Bottle & Sucker Lakes		
Access Point #10	Baldwin Bay Marina		
Access Point #11	Pencil Lake Boat Launch		
Access Point #12	Tuckers Road		
Access Point #13	Loon Call Lake		
Access Point #14	Wolf Lake		
Access Point #15	The Landing Marina		
[Note: The "Landing" is no longer a marina or access point but the site of a condominium development.]			

Historical Note

"Mississagua"

The name that applies to the Lake in the geographic township of Cavendish, and the River in the geographic township of Harvey is spelled differently in several sources.

Since the area was first surveyed, there appear to be several candidate spellings that have been used, including "Massasagua (Lake), Missisauga (Lake & River), Mississauga (Lake & River), Mississaga (River), Mississaugua (Lake & River) and Mussissaga (Lake).

According to the Provincial Geo-referencing Unit, Office of the Surveyor General, Ontario, the proper name for both the lake and the river – Mississagua – was formalized on March 31, 1924, by the Geographic Board of Canada, apparently because this was the version used on the majority of the government and other formal documents of the time.

(van der Meer, 2000)

Further north on Highway 28, just south of Apsley, the year round 9 km Anstruther Lake Road provides access to a marina, water access points on Anstruther Lake, Loon Call Lake and Wolf Lake, as well as to several seasonal roads providing additional cottage access to Wolf Lake, Loon Call Lake and the south side of Anstruther Lake. Access to other parts of Anstruther Lake as well as Rathbun Lake is by water travel.

Several old roads and trails penetrate the Kawartha Highlands. Most are not identified on maps, and may originate from early logging activity or from historic access to hunt camps or fishing lakes. While several of the recreation camps located within the area once relied on water or foot travel for access, most now have some sort of trail access suitable for four-wheel drive vehicles or all terrain vehicles (ATVs). The use of ATVs has been increasing significantly in the last decade. Not only do they provide easier access to remote properties, but they increase potential access to Crown land adjacent to these properties.

Public access points to water were generally provided on lakes where cottage lots were sold, as many cottages were water access only. Cottage roads were frequently developed afterwards, as a local effort. Several of these marine accesses, formally called Public Access Points, exist in or provide traditional entry to the Kawartha Highlands (Table 1, Figure 2). In addition to cottage access, they allow general use of lakes by boaters and anglers, provide access to remote properties, and allow entry to canoe routes within the area. Most were initially under the management of the Ministry of Natural Resources, but now some are municipally maintained, or are managed in agreement with a local marina, lodge or Cottager's Association.

Cottages speckle the shores of Anstruther Lake.

2.3 Land Tenure and Development

(refer to Figure 3)

2.3.1 Patented Land

The low agricultural potential of the rocky lands of the eastern half of the geographic township of Harvey, and all of the geographic townships of Cavendish, Anstruther and Burleigh, as well as the lack of penetration of these areas by settlement roads, ensured that most of the contained land was not taken up for settlement, and thus is still in public ownership. Generally, the "settled" lands in these townships are clustered along the Kawartha Lakes and County Road 36 (originally known as the Oregon Trail), along County Road 507 (originally known as the Buckhorn or Government Road) and along Highway 28 (originally known as the Burleigh Road). Most of these lands were patented in the last half of the nineteenth century.

The next wave of settlement came in the mid-twentieth century, when the Ontario Government began making land on the larger lakes within these townships available as cottage lots. Significant cottage communities developed on Catchacoma, Mississagua, Gold, Beaver, Anstruther, Wolf, Loon Call, Long and Loucks lakes.

It is very possible that this pattern of cottage development would have continued to spread to the smaller lakes in these townships such as Serpentine, Copper, Buzzard and Cox, if not for the 1959 designation of areas of Anstruther, Burleigh and Harvey townships as wilderness areas.

Historical Note

Excerpts from a News Release, January 19, 1959

"Lands and Forests Minister, J.W. Spooner, has announced the permanent reservation of seven large areas of Crown Land in the Lindsay Forest District. These lands, located in Haliburton, Victoria and Peterborough counties will be set aside as wilderness areas and are dedicated to forest and wildlife conservation and public recreation..."

"As the need arises, some of this public land will be made accessible by road and will be developed as provincial parks with camping, picnicking and bathing facilities being provided. The proximity of the lands to the large Southern Ontario centres as well as their natural beauty make them particularly desirable for this purpose."

The Minister included the following general areas of reservation:

- A large area of land in Harvey and Burleigh Townships lying generally between Buckhorn Road and Highway No. 28.
- An area in Anstruther Township containing Bottle, Sucker, Rathbun, Copper and Serpentine Lakes", and later (1969) as Recreation Reserves, under the Public Lands Act. The recreation reserves became part of their surrounding management areas in the 1993 District Land Use Guidelines.

(van der Meer, 2000)

Table 2 identifies the approximate number of properties on the various lakes within or adjacent to the Kawartha Highlands.

Table 2: Cottage Properties by Lake

(W = within KHSSP; A = adjacent to KHSSP)

Lake	Approximate # of Properties	Lake	Approximate # of Properties
Anstruther (W)	220	Long (W)	30
Beaver (A)	250	Loon Call (W)	95
Big Cedar (A)	110	Loucks (W)	30
Bottle (W)	4	Mississagua River (W)	50
Buzzard (W)	3	Mississagua (A)	400
Catchacoma (A)	600	Pencil (A)	45
Coon (A)	50	Rathbun (W)	35
Cox (W)	1	Wolf (W)	60
Total Within	**528**	**Total Adjacent**	**1455**

2.3.2 Pre-existing Kawartha Highlands Provincial Park

A portion of the Kawartha Highlands already existed as a provincial park prior to the regulation of the Kawartha Highlands Signature Site Park. This pre-existing park has been incorporated into the new park boundaries. The pre-existing Kawartha Highlands Provincial Park was a Natural Environment Class and was considered "non-operating" as funding was not allocated for active management. This area of 1861 ha surrounding Bottle and Sucker lakes was put into regulation under the Provincial Parks Act in 1989, having been a Park Reserve since 1979. Its potential as a Provincial Park was first mentioned in a news release from Lands and Forests Minister, J.W. Spooner, in 1959, with the concept that it would accommodate camping, picnicking and bathing facilities.

Aerial view of pre-existing Kawartha Highlands Provincial Park featuring Bottle and Sucker Lakes.

A development plan was prepared in 1967, and construction of the park entry road began in the winter of 1968 through "Winter Works" funding. A combination of factors, including lack of continuing Winter Works funding and a reconsideration of the appropriateness of the development plan to the area, resulted in the development for the proposed park being discontinued.

Although they were not planned, developed or authorized by the Ministry of Natural Resources, there are trails within the pre-existing provincial park that are used for access. One is a walking trail providing access to the Bottle Creek Dam. Another is a portage/ATV/4x4 trail from the Beaver Lake Road on the north side of Beaver Lake to the south side of Bottle Lake. A longer trail provides access (ATV, pedestrian) into the core of the Provincial Park. It runs more or less parallel with the 1968 cut road allowance, which has since grown over.

The 17 campsites on Bottle and Sucker lakes receive extensive use by campers who gain access by canoe or by the trails noted above.

2.3.3 Mining Claims and Leases (Forest Reserves)

At the onset of land use planning for the Kawartha Highlands Signature Site in July 2000, several areas within the proposed boundaries of the site identified for protection had some existing mining claims and/or leases under the *Mining Act*. These areas were given the land use designation of "Forest Reserve" as they were identified for inclusion into the Kawartha Highlands but a more detailed examination determined that these areas had existing mining claims and/or leases. The Forest Reserve designation indicated the intention of incorporating these areas into the larger protected area if the claims or leases were retired through normal processes. Until that time, areas with mining lands would not form part of the regulated protected area. Policies for the management of Forest Reserves prohibit other commercial resource extraction activities (e.g., forestry, hydroelectric power development and peat extraction).

Over the course of the past land use planning process for the Kawartha Highlands, which ultimately determined that the area should become a provincial park, several of the existing mining claims and leases were retired through normal processes. Originally there were approximately 1500 ha of land identified as Forest Reserve. By 2004, over 1000 ha of this total Forest Reserve area was incorporated into the proposed regulated park due to the lapse of mining lands.

Currently, only one Forest Reserve area (approximately 150 ha) remains associated with the Kawartha Highlands and is the location of an active aggregate permit which is described in the next section.

2.3.4 Aggregate Permits and Licences

Aggregate permits and licences are issued through an assessment and consultative process by the MNR for aggregate operations on Crown land and private land respectively. In the case of the Kawartha Highlands, one aggregate permit in the south west of the site is excluded from the park and has a Forest Reserve designation. The current product of this permit is dimensional building stone.

Several other aggregate operations are adjacent to the boundaries of the Kawartha Highlands, both on private and Crown land. On the Township of North Kawartha side, there are three sand and gravel permits, all within the geographic township of Anstruther. On the Galway-Cavendish and Harvey side, many more operations are active adjacent to the Kawartha Highlands boundaries. Nine aggregate permits and four licences are distributed along County Roads 36 and 507, and a variety of aggregate is being extracted, including dimensional building stone, granite, sand and gravel.

2.3.5 Recreation Camps

A number of Land Use Permits have been issued for recreation camps throughout this area. Originally these were one-acre (now 0.5 ha) lots, issued for a period of one year for the purpose of erecting and operating hunt camps. Hunt camps were generally considered to be rustic facilities, and, as much as possible, were located to evenly distribute hunting pressure. Over the years, especially with increased accessibility through the use of snow machines, four-wheel drive vehicles and ATVs, many of these camps received increased use beyond the hunting season and have now become known as "recreation camps". The authority for most of these recreation camps was originally issued between 1941 and 1969, and they have been renewed on an annual basis to date.

There are currently 57 recreation camps within the Kawartha Highlands and 13 immediately adjacent to the boundary of the park. Approximately 70 per cent of the recreation camps in and adjacent to the Kawartha Highlands are registered to individuals or trustees with addresses within 60 km of their camp. This suggests that the Kawartha Highlands is an important recreational area locally.

2.3.6 Trap Cabins

Trapline buildings may be required by licensed trappers to provide shelter for accommodation and safety purposes, and for efficient trapline management. Under the Public Lands Act, the "Free Use Policy" provides that buildings used by a licensed trapper in accordance with this

policy do not require land use occupational authority. Trapline buildings may consist of a cabin, an ancillary building for skinning and/or storage and a privy. These cabins are limited in size to 400 square feet and the ancillary building is limited to 200 square feet. Present day fur management practices often require year round use of trapline buildings for management of nuisance animals, and building and equipment repairs. The Ministry has provided for year round use of the approved trapline buildings, for legitimate trapline management purposes.

There are currently 15 trap cabins in the Kawartha Highlands and one secondary trap cabin. A few of these trap cabins are in derelict condition and are currently not being used for trapline management.

2.3.7 Outpost Camps

Commercial outpost camps, under the authority of Land Use Permits, allow commercial operators to fly clients to specified lakes for consumptive and non-consumptive purposes. Within the Kawartha Highlands, each location has a dock and cabin for overnight accommodation.

There are four commercial outpost camps within the Kawartha Highlands. These are located on Fair Lake (S. Wilcox, Haliburton), Elm Lake and Pilot Lake (Haliburton Highlands Air Service) in Burleigh Township, and Bear Lake (R. Tapson, Peterborough) in Anstruther Township.

Most of the commercial marinas and some of the cottages on the lakes in or adjacent to the Kawartha Highlands have some form of tenure, usually a Land Use Permit or a Licence of Occupation, for facilities such as docks, parking lots and storage buildings, where these facilities are located on adjacent public land. Individual roads or lanes to lakefront properties are also occasionally authorized through these same forms of tenure.

Electrical transmission lines and telephone lines are located around and under several of the lakes that have private lands on them, and these usually receive their authority to occupy public land through land use permits.

2.3.8 Other Permits and Licences

Most of the commercial marinas and some of the cottages on the lakes in or adjacent to the Kawartha Highlands have some form of tenure, usually a Land Use Permit or a Licence of Occupation, for facilities such as docks, parking lots and storage buildings, where these facilities are located on adjacent public land. Individual roads or lanes to lakefront properties are also occasionally authorized through these same forms of tenure.

Electrical transmission lines and telephone lines are located around and under several of the lakes that have private lands on them, and these usually receive their authority to occupy public land through land use permits.

2.3.9 Municipal Landfill Sites and Transfer Stations

There are a number of municipal landfill and waste transfer sites adjacent to the boundaries of the Kawartha Highlands.

The Township of North Kawartha operates the Haultain Transfer Station (adjacent to Highway 28) and the Anstruther Landfill Site (off of the Anstruther Lake Road) which are relatively close to the boundaries of the Kawartha Highlands. The Anstruther Landfill Site was closed in 2005 and became a transfer station.

The Township of Galway-Cavendish and Harvey operates two landfill sites in close proximity to the Kawartha Highlands. The Buckhorn Landfill Site is just north of County Road 36, a few kilometres from Buckhorn. The Cavendish Landfill Site is off of County Road 507, just south of the Cavendish Community Centre.

3.0 PURPOSES of THE PARK

Section 2 of the *KHSSP Act* legally defines the purposes of the Act and this section is included below. The management plan to be developed must incorporate these purposes to ensure that the legal obligations under this Act are met.

2. *The purposes of this Act are to ensure,*

(a) *that the protection of the ecological integrity of the Kawartha Highlands Signature Site Park is recognized as the overriding priority in the management and administration of the Park, so as to preserve, protect and enhance the natural composition and abundance of native species, biological communities and ecological processes in the Park;*

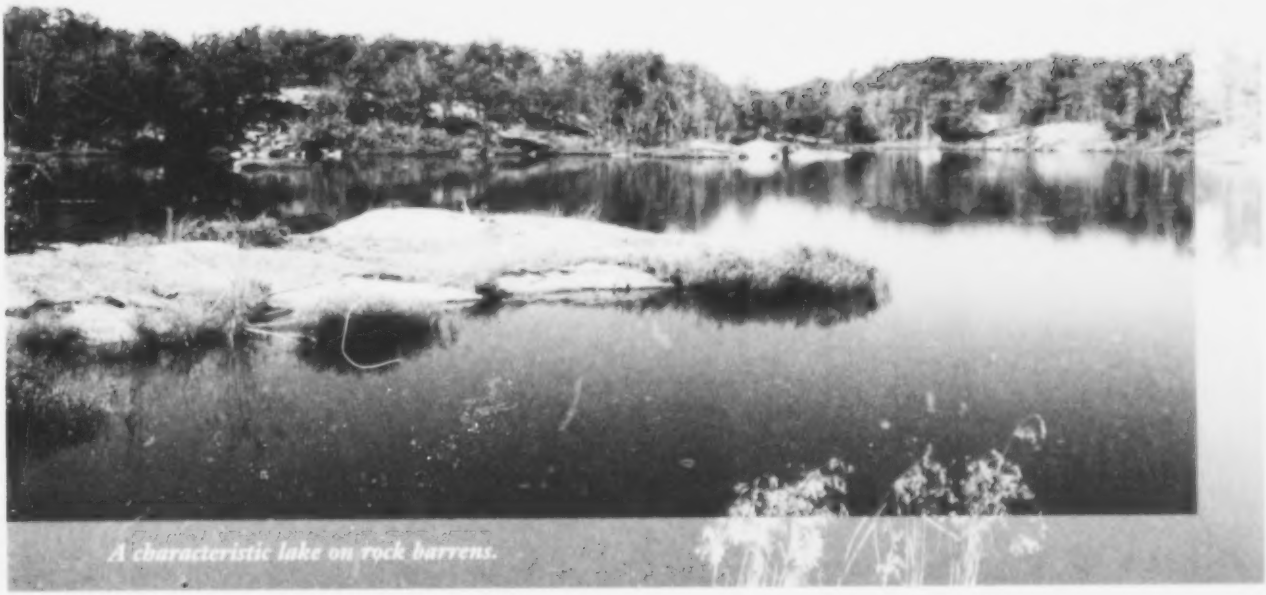
(b) *that the policies governing the Park, including its management, will protect the Park's natural and cultural values, maintain its traditional uses and provide the opportunity for recreational activities that are compatible with the natural heritage values and semi-wilderness character of the Park;*

(c) *that the Park will be managed so as to permit continued access to and enjoyment of private property and of Crown land that is subject to a land use permit, licence of occupation or lease under the Public Lands Act where that private property or Crown land is surrounded by Park lands or abuts Park lands; and*

(d) *that decisions with respect to the development and any major revision of the management plan for the Park are made with prior public consultation.*

This picture showcases the need to protect the natural and cultural values for which the park was created.

4.0 NATURAL RESOURCES



A characteristic lake on rock barrens.

4.1 Ecological Integrity

NOTE: At the time of writing of this Kawartha Highlands Signature Site Park *Background Information* document, the following information regarding ecological integrity was current but it is subject to change.

The government has introduced new legislation for the permanent protection of provincial parks and conservation reserves. The new *Provincial Parks and Conservation Reserves Act* received first reading on October 25, 2005.

The following are excerpts from the draft legislation that deal with ecological integrity:

Planning and management principles

3. The following principles shall guide all aspects of the planning and management of Ontario's system of provincial parks and conservation reserves:

1. Maintenance of ecological integrity shall be the first priority and the restoration of ecological integrity shall be considered.

2. Opportunities for consultation shall be provided.

Ecological integrity

(2) Ecological integrity refers to a condition in which biotic and abiotic components of ecosystems and the composition and abundance of native species and biological communities are characteristic of their natural regions and rates of change and ecosystem processes are unimpeded.

Same

(3) For the purpose of subsection (2), ecological integrity includes, but is not limited to,

(a) healthy and viable populations of native species, including species at risk, and maintenance of the habitat on which the species depend; and

(b) levels of air and water quality consistent with protection of biodiversity and recreational enjoyment.

Beavers help to support ecosystem functions through wetland creation.

To meet the requirement of Section 2(a) of the *KHSSP Act* (see Section 3 of this report) to ensure that ecological integrity remains the overriding priority in the protection of this area there must be a common understanding of what is meant by the term ecological integrity. Expanding on the above definition can help advance understanding of the term ecological integrity.

"Composition and abundance of native species and biological communities" can be thought of as the number of different species (biodiversity), and also population numbers of any one species. Composition further includes the associations of native species and the habitats required for their survival; this comprises a "biological community" and is also referred to as the "structure" of an ecosystem. Included in the composition of these habitats are abiotic (non-living) components such as mineral soil, water and air. It is important to include these non-living components because they are equally as important to ecosystem function as plants and animals.

"Rates of change and supporting processes" reflect the fact that ecosystems are dynamic and are continually changing in composition, structure and function. Many of the processes involved in supporting ecosystem change are often traditionally thought of as negative influences. However, wildfire, flooding, drought, and other so-called natural disasters are often beneficial in creating habitat and ecological niches required by rare plants and animals. The functional processes just mentioned have allowed the species and biological communities of the Kawartha Highlands to evolve into their present state. Other processes that support natural rates of change in ecosystems include nutrient cycling, photosynthesis, and the hydrologic cycle.

Ecological Note

Ecosystem Composition, Structure and Function

Ecosystems can be described according to their composition, structure and function.

- Composition means species of organisms and non-living components such as mineral soil, air and water.
- Structure means the way in which composition is arranged in a biological community and the types of habitat present in the ecosystem.
- Function describes processes that ecosystems perform such as photosynthesis, hydrologic cycling, succession, and nutrient cycling.

"In plain language, ecosystems have integrity when they have their native components intact, including: abiotic components (the physical elements, e.g. water, rocks), biodiversity (the composition and abundance of species and communities in an ecosystem, e.g. tundra, rainforest and grasslands represent landscape diversity; black bears, brook trout and black spruce represent species diversity) and ecosystem processes (the engines that make an ecosystem work, e.g. fire, flooding, predation)."
(Parks Canada Agency, 2000)

4.2 Significant Features *(refer to Figure 4)*

Among the many biological communities of the Kawartha Highlands there are features which stand out as areas of high ecological significance. These features effectively portray the natural heritage valued by park stakeholders and must be protected as ecologically and culturally essential elements of the Kawartha Highlands. The Vision statement for this park speaks to the importance of preserving the semi-wilderness characteristics and preserving both natural and cultural heritage values.

In 2000, the Natural Heritage Information Centre of the Ministry of Natural Resources undertook a one year study entitled, "Reconnaissance Life Science Inventory of the Kawartha Highlands Signature Site" (Jalava et al., 2001). Section 4.2 is a direct excerpt from this report, except where noted (Limestone Plain/Alvar).

Wilderness Qualities

In its purest form, wilderness is vast and primeval. It includes pristine landscapes and waterscapes, native plants and animals and clean water and air. It is a place where nature functions freely, unencumbered by industrial and agricultural activities. Wilderness is a place of natural wonder, a place of scientific and educational discovery and a place of solitude that has nurtured the evolution of the human body and spirit (Davidson *et al.*, 2000). Wilderness is a place where visitors minimize their impact on the landscapes and waterscapes with low impact camping and travel by non-mechanized means. Ontario Parks minimum size standard for wilderness parks is 50,000 ha (optimum 100,000 ha), and for Wilderness Zones is 2,000 ha (the optimum is 50,000 ha) (OMNR, 1992).

Black Spruce Bog exhibiting wilderness qualitlites.

It was noted during an October 2000 helicopter survey of the Kawartha Highlands that much of the northern portion of the study area appeared to have undergone very little recent disturbance. The only significant recent human impacts observed in this area were a few widely scattered hunt camps, two major snowmobile trails and two old roads, which are also used by all-terrain (ATV) and off-road vehicles (ORVs). Some of the treed bog and fen communities appeared to be of exemplary quality.

Based on numerous field visits during 2000, it was also noted that much of the pre-existing Kawartha Highlands Provincial Park, which is immediately to the south of the area just described, is relatively undisturbed. The pre-existing provincial park is dissected by two access roads that are used by ATVs and ORVs, and there is a small cluster of cottages on patent land on the western side of Bottle Lake. Aside from these disturbance factors, the combination of the existing Kawartha Highlands Provincial Park and the extensive natural landscape to the north forms what could be considered a relatively intact "wilderness area". Much of the south-central and south-eastern portions of the Signature Site also have wilderness qualities.

Rock barrens with woody debris provide habitat for rare species such as the Five-lined Skink.

Large wilderness areas, such as the northern portion of the Kawartha Highlands, may provide refuge for species that are particularly vulnerable to human disturbance or which deliberately avoid areas with human activity.

Rock Barrens

One of the outstanding features of the Kawartha Highlands is its representation of open gneissic rock barrens. These rock barrens occur throughout the study area, but are most extensive in the south-eastern quadrant of the site and immediately north of Long Lake, an area identified as a provincially significant Area of Natural and Scientific Interest (ANSI) primarily for its representation of rock barrens (Brunton, 1990). The rock barrens support populations of the provincially rare Five-lined Skink and, at least formerly, Prairie Warbler. Other species of note on the barrens include the provincially rare Secund Rush, as well as breeding Whip-poor-will, Common Nighthawk and the Dark-eyed Junco, which is near the southern limit of its breeding range. Because of the extremely shallow to nonexistent soils, rock barren vegetation is particularly susceptible to disturbance by vehicles and trampling.

Mature Forests

The Kawartha Highlands supports a number of forest stands of exemplary quality, and many stands that have undergone little recent disturbance. High-quality forests include:

1. An old-growth Eastern White Pine-dominated forest to the southwest of the Tuckers Road access point that probably has qualities of the forests that dominated the study area prior to a period of intensive logging during the past century (other relatively mature pine forests were found to be scattered throughout the study area during the October 2000 helicopter survey);
2. Eastern Hemlock-dominated forests north of the western portion of Anstruther Lake, along the slopes on both sides of Bottle Creek, throughout the Bottle Creek ANSI, and in a few other locations;
3. Sugar Maple-dominated forests on the limestone plain at the south-western end of the site, the former forest reserve along Anstruther Lake Road, and a few other sites; and
4. Red Oak-dominated forests at the extreme north-eastern end of the site. The provincially rare Cerulean Warbler is usually associated with mature deciduous forests south of, and along the Precambrian – Paleozoic contact line in Ontario.

Ecological Note

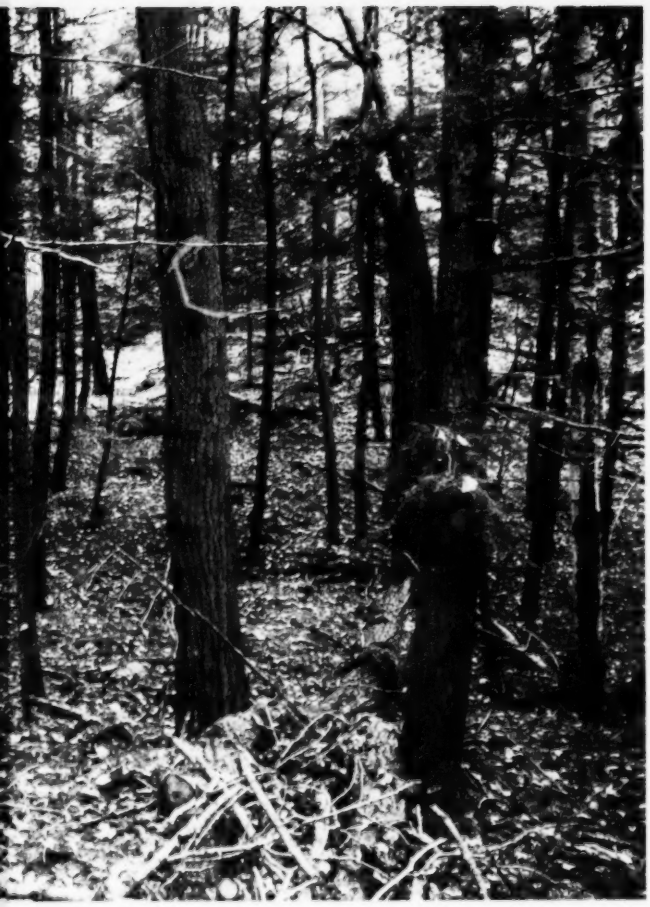
Long Lake Barrens Area of Natural and Scientific Interest (ANSI)
(From Life Science Inventory Check Sheet – Brunton, 1990)

A complex of wetlands and dry granite-based rock barrens with the scrubby growth and young coniferous and deciduous forest dominates the landscape. Bedrock control of the topography is extreme, with severely disrupted drainage and extensive ridges of bare rock, steep slopes and small cliffs. Peatlands rimmed with acidic bog mat margins and closed bog mat heaths are common across the site. Such typical bog and acid-shore species as Bog Aster, Northern St. John's Wort, and Three-way Sedge are common, with sundew species, Leather Leaf and Sweet Gale. Water willow is common along quiet lake shores and is approaching the northern limit of its range here. Upland barrens are characterized by juniper and blueberries, with Braken Fern, Poverty Grass and Wavy Hair-grass being typical of such warmer drier sites in the southern Shield of Ontario. This complex of northern peatlands in a rugged landscape of Georgian Bay influenced bedrock barrens is unique in Site District 5E-11 and shows strong affinities with the Georgian Bay shoreline.

The site provides excellent and common representation for granite lakeshore cliffs and rock slopes, bare rock ridge vegetation, young, open, very dry Red Oak – Red Pine forest as well as a variety of acidic bog mat features more typical of areas to the north. The Georgian Bay influence on the site is dramatic and is expressed uniquely here within Site District 5E-11.

Mature hemlock forest

The regionally significant Marten is associated with mature, relatively undisturbed forests of the Precambrian Shield, particularly where there is a strong component of pine. Some species associated with large tracts of natural landscape, such as Moose, Barred Owl and the vulnerable Red-shouldered Hawk, also show a preference for mature, relatively undisturbed forests.



Limestone Plain/Alvar

"Alvars are naturally open areas of thin soil over flat limestone or marble rock with trees absent or at least not forming a continuous canopy. It is estimated that at least three-quarters of the total area of alvars in the Great Lakes region are in Ontario. Most of the communities found within alvar landscapes are considered rare in Ontario and throughout their ranges; and over 100 rare, threatened and endangered plant and animal species are largely confined to the alvars. Alvars also contain many disjunct species with southern, western and northern affinities, as well as endemic taxa." (Brownell and Riley, 2000)

New information concerning the Kawartha Highlands alvar has arisen since the "Reconnaisance Life Science Inventory of the Kawartha Highlands Signature Site" (Jalava, et al., 2001) was written. The location of this alvar is on the boundary of ecodistricts 5E-11 and 6E-9, so detailed examination of geological formations was required in order to determine in which ecodistrict it resided. It was determined that this alvar is actually located within ecodistrict 5E-11, and not 6E-9 as previously thought. This conclusion has arisen from further recent examination (Crins and Bakowsky, 2004), thus the text from the original report has now been replaced with this new information.

Limestone plain occupies a relatively small area of Crown land partly within the south-western end of the Kawartha Highlands, with the northern section in an aggregate permit area. It sustains the best known example of alvar vegetation between the Carden Plain and the Madoc area, as well as some of the most floristically rich forest stands in the Kawartha Highlands. The alvar community is provincially significant in the ecodistrict context and it is also considered a globally rare vegetation community type (Reschke *et al.*, 1999).

Most of the Kawartha Highlands alvar consists of alvar woodland, which is dominated by trees (White Pine, White Elm, White Cedar, Sugar Maple), shrubs such as Common Juniper, and a graminoid herbaceous layer (Pennsylvania Sedge, Poverty Grass). There are a few open sections of alvar grassland, dominated by Poverty Grass and scattered Common Juniper, particularly near the south end.

The alvar vegetation located approximately 500 m north of Flynn's Corners, to the east of County Road 507, consists largely of extensive alvar grassland dominated by poverty grass. In some sections, there are scattered Common Juniper. Alvar woodland is also present, consisting of scattered White Oak, White Elm and White Cedar, and a herbaceous layer dominated by Poverty Grass.

Ecological Note

Bottle Creek Area of Natural and Scientific Interest (ANSI)
(From Life Science Inventory Check Sheet – Brunton, 1990)

A moderately broken bedrock-controlled landscape of thin soil over granite bedrock characterized by young to medium aged deciduous and coniferous upland forests is dominant. Hemlock and sugar maple dominate the forest vegetation, with hemlock being unusually well represented in the southwest of the site. Along the shore of Bottle Creek a dry forest of red oak, white pine and red maple grows in thin to almost absent soil with white birch and white spruce. The lake shore is abrupt, largely as a result of the fixed-height weir that maintains a high water level. The shore vegetation is diverse and growing on substrate varying from bare bedrock to silty sand.

The site condition along much of the north shore of the creek is warmer than normal.

The creek-side vegetation is exceptional, representing a complex of Atlantic Coastal disjunct species such as Meadow Beauty, Purple Bladderwort, Bog Muhly, as well as other uncommon eastern and southern species such as Flat-branched Groundpine, Fern-leaf Pondweed, Creeping Bladderwort, Primrose-leaved Violet, Canada St. John's Wort, and Brown-fruited Rush. This is likely the richest complex of such a disjunct flora in Ontario outside of Muskoka–Parry Sound.

The Meadow Beauty is rare in Ontario. Purple Bladderwort, Bog Muhly and Canada St. John's Wort are uncommon in the province and are characteristic elements of the Atlantic Coastal Plain floral element found locally in the southern Canadian Shield area.

While both sites have a similar flora, the major or dominant vegetation types occurring at each site are different. The Kawartha Highlands Alvar site represents alvar woodland, while the Flynn's Corners site is chiefly alvar grassland. Since these two sites are the only alvars in ecodistrict 5E-11 for which representative values are known, and since they differ in their predominant representative values, both are considered provincially significant. Both vegetation types are unrepresented within the protected area system in ecodistrict 5E-11.

The Kawartha Highlands alvar appears to be in excellent condition throughout. There is evidence of past fire, and this is the ecological factor maintaining alvar on this dry site.

The limestone woodlands on Crown Land adjacent to the alvar are much richer in terms of nutrients than the gneissic bedrock and granitic till-derived soils that dominate the study area. Consequently, the species diversity is much higher on these limestone-derived soils. Within

The global distribution of alvar communities is restricted to the Baltic Islands and around the Great Lakes region.

Aerial view of Crane Lake Bog.

Atlantic coastal plain species can be found on shorelines of lakes with fluctuating water levels.

the study area, a number of vascular plant species were found only in the limestone woodlands. These include the endangered Butternut and the regionally rare Walking Fern.

Bog and Fen Communities

The Kawartha Highlands contains some outstanding examples of bog and fen communities. A variety of these communities was documented during on-site fieldwork, and several additional ones were observed in the northern portion of the study area during the October 2000 helicopter survey. Of particular note is the Crane Lake Bog Complex, now incorporated into the park. The bogs and fens of the Kawartha Highlands sustain such provincially rare taxa as Billings' Three-seeded Sedge, Marsh St. John's-wort, and a variety of orchids including the provincially rare White-fringed Orchid. A number of species at the southern edges of their ranges in Ontario occur in the bog and fen communities, including Bog Fritillary (a butterfly), Spruce Grouse, Olive-sided Flycatcher and Lincoln's Sparrow.

Atlantic Coastal Plain Communities

Marsh communities dominated by disjunct Atlantic Coastal Plain flora develop on peaty, sandy or gravelly shorelines of lakes and rivers that typically experience fluctuating water levels (Reznicek, 1994). It is believed that fluctuating water levels are very important in the continued maintenance of this vegetation. Where water levels do not fluctuate greatly, shrubs usually become established along the water's edge. However, in areas with fluctuating water levels, Atlantic Coastal Plain species survive in the seedbank along nearshore areas. During periods of low water levels, these sites become exposed, allowing the coastal plain species to germinate, thrive and set seed. In this way, they have managed to persist in this area for over 10,000 years (Keddy and Reznicek, 1982).

In Kawartha Highlands, the best-developed Atlantic Coastal Plain marshes occur along the shoreline of Bottle Creek and on the upper portion of the Deer Bay Creek watershed that includes Loucks, Long, Buzzard, Vixen, Stoplog and Shark lakes. These species occur in other

Ecological Note

Species At Risk

Any plant or animal threatened by or vulnerable to, extinction is a species at risk.

In Canada, there are five categories of risk that are assigned by the national Committee on the Status of Endangered Wildlife in Canada (COSEWIC). The Committee on the Status of Species at Risk in Ontario (COSSARO) reviews status reports and assesses the level of risk for each species in Ontario. The work of COSSARO integrates with and complements the work of COSEWIC.

The status designations include:

Extinct – any species that no longer exists anywhere

Extirpated – any native species that no longer exists in the wild in Ontario, but still exists elsewhere in the wild

Endangered – any native species that is at risk of becoming extinct in all or most of Ontario

Threatened – any native species that is at risk of becoming endangered in Ontario

Special Concern (Vulnerable) – any native species that is sensitive to human activities or natural events

Information from:
http://www.ontarioparks.com/saro-list.pdf

scattered locations in the study area where suitable habitat exists, such as the vicinity of Serpentine Lake. The exposed shores of these waterbodies consist of peat, as well as coarse sand, cobbles and occasional boulders. A number of the Atlantic Coastal Plain species are provincially rare. These include Bayonet Rush, Carey's Smartweed, Snail-seed Pondweed, Virginia Meadow-beauty, Twin-scaped Bladderwort and Yellow-eyed Grass.

Concentrations of Species-at-Risk

There are several areas where concentrations of species-at-risk exist within the Kawartha Highlands, and all known significant concentrations are associated with the six features described above. Although the mapped occurrences of rare species correspond closely, of course, with the field observation points, certain areas within the Kawartha Highlands clearly have higher concentrations of species-at-risk than do others. Of particular importance are the shorelines that support Atlantic Coastal Plain flora and the alvar community.

The Five-lined Skink, a species sensitive to human activities, in its natural habitat.

Winter on a frozen wetland in the Kawarthas.

4.3 Climate

Kawartha Highlands is situated at the southern edge of the Algonquin Park climate region (a.k.a. the Haliburton Slopes – West section of the Central Ontario recreation climatic region) (van der Meer 2000). It is located immediately north of the Simcoe and Kawartha Lakes climate region (a.k.a. the Southern Ontario recreation climatic region) (ibid.). Prevailing winds and weather systems generally move from west to east across the region, with a normal year-round pattern of cool to cold, dry Arctic high-pressure systems alternating with warm, humid low-pressure systems originating in the south (ibid.). Precipitation is associated both with warm fronts of advancing low-pressure systems, as well as with cold fronts that usher in the high pressure systems.

Growing seasons are relatively short compared to regions further south because of the inland location of the Kawartha Highlands. Localized higher precipitation occurs as a result of the influence of Lake Huron and Georgian Bay to the west. At 250 m above sea level, the southern portion of the Kawartha Highlands has the lowest elevation of the Haliburton Slopes – West portion of the Central Ontario recreation climatic region. The Kawartha Highlands slope upward to the north and east (eventually to 600 m on the Algonquin Dome), which further contributes to increased precipitation in the study area (ibid.).

The Kawartha Highlands falls between at least three Environment Canada weather stations having sufficient data from which to draw averages, namely, Bancroft to the northeast, Minden to the northwest, and Peterborough – Trent University to the south. Climate data for these stations are presented in Tables 3-5 respectively.

Table 3: Climate Normals for Bancroft Weather Station

BANCROFT, Ontario; 45°03-N 77°51-W/O; 327m; 1882 to 1985; Copyright © 1998, Environment Canada. All rights reserved.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Temperature													
Daily Maximum (°C)	-5.2	-3.1	3.0	10.3	17.9	22.5	25.1	23.5	19.3	12.8	4.8	-2.5	10.7
Daily Minimum (°C)	-16.5	-15.9	-8.6	-2.0	4.0	9.4	12.2	11.2	7.1	1.3	-3.5	-11.9	-1.1
Daily Mean (°C)	-10.7	-9.5	-2.7	4.1	11.0	16.0	18.7	17.4	13.2	7.2	0.7	-7.1	4.8
Extreme Maximum (°C)	11.7	12.2	24.4	30.0	33.3	35.0	37.8	36.1	33.9	27.8	23.9	16.0	
Extreme Minimum (°C)	-43.9	-42.2	-38.3	-23.3	-10.0	-5.0	0.0	-1.7	-6.7	-16.7	-26.7	-41.1	
Degree-Days													
Above 18 °C	0.0	0.0	0.0	0.0	5.6	21.6	53.4	32.5	9.9	0.2	0.0	N	N
Below 18 °C	892.9	777.1	645.0	416.4	224.6	82.1	29.7	53.6	155.2	336.3	520.7	N	N
Above 5 °C	0.1	0.1	5.1	43.9	189.3	329.6	426.7	381.9	245.2	97.6	15.2	N	N
Below 0 °C	339.1	273.6	123.5	17.4	0.1	0.0	0.0	0.0	0.0	2.8	49.5	N	N
Precipitation													
Rainfall (mm)	12.5	17.1	37.6	53.7	80.9	89.8	73.8	86.2	90.6	75.4	63.9	27.9	709.5
Snowfall (cm)	47.8	36.0	28.2	9.8	0.8	0.0	0.0	0.0	0.0	2.9	20.0	49.1	194.6
Precipitation (mm)	60.9	53.1	65.8	63.5	81.7	89.8	73.8	86.2	90.6	78.3	83.8	77.4	905.1
Extreme Daily Rainfall (mm)	58.2	54.6	49.0	39.6	70.3	61.6	76.2	83.1	83.2	60.2	67.3	52.8	
Extreme Daily Snowfall (cm)	38.1	36.8	33.0	30.5	15.2	0.0	0.0	0.0	0.0	15.2	25.4	43.2	
Extreme Daily Pcpn. (mm)	65.8	54.6	61.5	43.2	70.3	61.6	76.2	83.1	83.2	60.2	67.3	52.8	
Days with													
Maximum Temperature > 0°C	7	8	21	29	31	30	31	31	30	31	24	N	N
Measurable Rainfall	2	2	6	9	11	12	11	11	11	12	9	3	99
Measurable Snowfall	10	8	6	2	*	0	0	0	0	*	4	9	39
Measurable Precipitation	11	9	11	10	11	12	11	11	11	12	12	12	134

Table 4: Climate Normals for Minden Weather Station

MINDEN, Ontario; 44°56-N 78°43-W/O; 274m; 1883 to 1990; © 1998, Environment Canada. All rights reserved.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Temperature													
Daily Maximum (°C)	-4.9	-3.1	2.8	10.9	18.4	23.0	25.6	24.1	19.5	12.9	4.9	-2.3	11.0
Daily Minimum (°C)	-16.4	-15.9	-9.6	-2.0	3.9	8.8	11.4	10.6	6.8	1.4	-3.2	-11.8	-1.3
Daily Mean (°C)	-10.6	-9.4	-3.3	4.5	11.1	15.9	18.5	17.4	13.2	7.2	0.9	-7.0	4.9
Extreme Maximum (°C)	10.6	13.0	21.5	29.5	32.2	33.9	35.0	35.0	32.2	27.8	23.3	17.0	
Extreme Minimum (°C)	-41.1	-39.4	-36.5	-24.4	-10.0	-3.9	-0.6	-3.3	-9.4	-13.9	-27.2	-40.0	
Degree-Days													
Above 18 °C	0.0	0.0	0.0	0.1	5.3	21.0	50.2	35.8	9.2	0.1	0.0	0.0	122
Below 18 °C	886.3	776.4	663.0	403.4	220.3	84.5	34.0	51.9	155.5	336.4	514.2	777.9	4904
Above 5 °C	0.1	0.1	5.7	54.3	193.2	326.6	419.2	386.9	244.5	97.3	18.3	1.4	1748
Below 0 °C	331.9	273.3	140.8	15.6	0.1	0.0	0.0	0.0	0.0	2.9	48.7	231.1	1045
Precipitation													
Rainfall (mm)	19.3	18.7	37.3	57.6	86.2	87.1	80.1	85.0	94.8	85.0	74.2	35.5	761.0
Snowfall (cm)	62.8	46.7	31.9	10.6	1.0	0.0	0.0	0.0	0.0	2.5	24.5	65.9	246.0
Precipitation (mm)	82.5	65.4	69.3	68.3	87.0	87.1	80.1	85.0	94.8	87.5	99.6	101.5	1008.1
Extreme Daily Rainfall (mm)	25.4	45.0	43.4	41.9	55.9	93.7	99.8	71.6	57.2	55.1	39.6	41.9	
Extreme Daily Snowfall (cm)	29.2	30.5	33.0	22.9	6.4	0.0	0.0	0.0	0.0	17.0	30.0	27.9	
Extreme Daily Pcpn. (mm)	29.6	48.0	51.0	41.9	55.9	93.7	99.8	71.6	57.2	55.1	39.6	41.9	
Month-end Snow Cover (cm)	42	50	26	0	0	0	0	0	0	0	9	26	
Days with													
Maximum Temperature > 0°C	7	8	20	29	31	30	31	31	30	31	24	11	283
Measurable Rainfall	3	2	5	9	11	11	9	11	11	12	9	4	98
Measurable Snowfall	12	9	6	2	*	0	0	0	0	*	5	12	47
Measurable Precipitation	14	10	11	11	11	11	9	11	11	12	13	15	139

Table 5: Climate Normals for Peterborough Weather Station

PETERBOROUGH TRENT U, Ontario; 44°22-N 78°18-W/O; 198m; 1968 to/à 1990; © 1998, Environment Canada. All rights reserved.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Temperature													
Daily Maximum (°C)	-4.1	-2.6	3.0	11.5	18.4	23.0	26.4	25.0	20.0	13.0	5.8	-1.2	11.5
Daily Minimum (°C)	-13.4	-12.1	-6.5	0.7	6.8	11.3	14.3	13.3	9.1	3.0	-1.5	-9.5	1.3
Daily Mean (°C)	-8.7	-7.3	-1.7	6.1	12.6	17.2	20.4	19.2	14.6	8.1	2.2	-5.2	6.4
Extreme Maximum (°C)	11.5	12.0	23.3	30.5	32.5	34.5	36.5	35.5	32.2	28.3	21.1	18.5	
Extreme Minimum (°C)	-35.0	-33.0	-29.0	-15.6	-3.5	0.0	5.0	2.0	-3.5	-8.9	-17.2	-33.0	
Degree-Days													
Above 18 °C	0.0	0.0	0.0	1.1	7.9	31.4	84.3	62.0	14.0	0.3	0.0	0.0	201
Below 18 °C	830.1	717.2	613.0	358.3	174.6	56.7	11.9	24.8	119.7	309.2	475.6	723.0	4414
Above 5 °C	0.2	0.3	10.7	78.7	237.4	364.8	475.4	440.1	284.4	113.2	25.1	2.1	2032
Below 0 °C	277.3	216.3	103.6	8.7	0.0	0.0	0.0	0.0	0.0	0.9	29.2	180.5	816
Precipitation													
Rainfall (mm)	16.6	22.1	42.8	58.0	72.8	75.1	73.9	82.2	71.6	65.7	66.2	33.2	680.4
Snowfall (cm)	37.8	32.1	26.0	6.9	0.6	0.0	0.0	0.0	0.0	2.7	16.9	47.7	170.7
Precipitation (mm)	53.4	53.1	69.0	64.8	73.5	75.1	73.9	82.2	71.6	68.4	82.8	81.4	849.4
Extreme Daily Rainfall (mm)	25.4	46.1	51.1	36.8	33.3	55.0	67.8	50.5	43.0	39.8	33.8	36.6	
Extreme Daily Snowfall (cm)	22.8	23.1	35.2	24.1	4.3	0.0	0.0	0.0	0.0	14.5	25.7	33.0	
Extreme Daily Pcpn. (mm)	45.0	46.1	62.4	36.8	33.3	55.0	67.8	50.5	43.0	39.8	35.0	51.3	
Days with													
Maximum Temperature > 0°C	10	10	21	29	31	30	31	31	30	31	26	14	294
Measurable Rainfall	3	3	7	10	13	12	10	12	12	14	12	5	114
Measurable Snowfall	13	9	6	2	*	0	0	0	0	*	5	11	47
Measurable Precipitation	15	12	12	12	13	12	10	12	12	15	15	15	154

4.3.1 Climate Change

The Sun's influence on Earth's climate is always changing because of fluctuating levels of solar radiation (energy pulses) and shifts in Earth's orbit. As such, climate change is a natural and constant event. But during the last two centuries of industrial revolution, additional sources of energy have been introduced to the ecosphere (Earth's largest ecosystem) by people.

People have added carbon dioxide, methane, nitrous oxide, and other greenhouse gases to the atmosphere by extracting and burning fossil fuels such as coal, oil, and natural gas. In addition, the drainage of wetlands and the conversion of forests and grasslands to other uses have contributed to the release of greenhouse gases to the atmosphere as carbon stored in these ecosystems is released during decomposition. For example, atmospheric carbon dioxide has increased 30 per cent since pre-industrial times, and these additional greenhouse gas molecules have trapped new heat and accelerated the rate of global warming.

With global warming, the additional heat energy in the system will increase variability in temperature, precipitation (rain, snow, and ice), and wind patterns. For example, as the amount of heat energy trapped in the lower atmosphere by greenhouse gases increases, it is likely that the frequency and size of extreme events such as wind storms, heavy rains, and ice storms will increase.

Natural and human-caused global warming is increasing at an unprecedented rate around the world. In Ontario, mean annual temperatures have increased by 0.5°C in the last hundred years and could increase another 2-5°C in the next 50-75 years. Although temperature increases likely will be greater in winter than in summer, and in the north than in the south, there will be significant changes to all seasons in every ecosystem throughout Ontario.

In Ontario, the increased annual average temperature will shorten winter and the duration of lake ice cover. This will impact skiing, snowmobiling, and ice fishing activities. These longer periods of warmer weather may extend opportunities to pursue outdoor activities such as camping, canoeing, and swimming.

As global warming continues, the summer seasons may yield an increase in the frequency of heavy rainstorms, more years when there are large forest fires, and more dangerously hot days. For example, climate models suggest that the average number of hot days (above 30°C) in London, Ontario will increase from about 15 days in 2004 to 30 days by 2050 and to 50 days by 2080. This change has significant health implications to people who are exposed to the heat.

Ontario's changing climate will significantly affect wildlife. For example, the Virginia Opossum now survives in habitats hundreds of kilometres north of its traditional range. Resident birds such as the Northern Cardinal and Black-Capped Chickadee may breed earlier and raise more broods each summer. As lake and river waters warm, cool water and cold water fish species will likely disappear. In some rivers and lakes, there will be a significant increase in the distribution and abundance of warm water fish species. The future distribution of forests likely will change as tree species respond to warmer temperatures and altered precipitation and wildfire patterns.

4.4 Watersheds *(refer to Figure 5)*

The Kawartha Highlands is comprised of two main watersheds which feed Mississagua River and Deer Bay Creek. The area drained by the Mississagua River can be further subdivided by a line running north – south through the centre of the northern half of the park. The Watershed Map (Figure 5) shows that Anstruther Lake drains an area equally as large as that draining into Bottle Lake. These two areas then combine to form a larger watershed

Rapids at low water on Mississagua River.

flowing into Mississagua River. The Deer Bay Creek watershed comprises a large portion of the south eastern quarter of the park from Long Lake and east to Cox Lake and south to the boundary.

The Kawartha Highlands is a headwaters area for Deer Bay Creek and the Mississagua River. The numerous wetlands in this area provide water retention and filtration services ensuring moderated river flows and providing exceptional water quality. These clearly defined watersheds provide unique opportunities for scientific study and are convenient indicators of ecological integrity. Watershed studies such as those conducted at Trent University are well served by having these watersheds protected as a park.

The Provincial Water Quality Monitoring Network run by the Ministry of the Environment (MOE), and the Ontario Benthic Biomonitoring Network also of the MOE, are participating in a partnership with the Kawartha Highlands staff to monitor the water quality and benthic organisms of the Mississagua watershed at the outlet of Stoney Creek on the north end of Bottle Lake, and at Anstruther Lake Dam outlet. The monitoring location on Bottle Lake will be used as a reference site because of its exceptional water quality. The Anstruther Lake site can then be measured against the reference site to determine the extent of water quality impacts.

There are several water level control structures located on water bodies within the Kawartha Highlands and these are described in Section 5.3.

4.5 Earth Sciences

Section 4.5 presents excerpts from the "Reconnaissance Life Science Inventory of the Kawartha Highlands Signature Site" (Jalava et al., 2001).

4.5.1 Geology

The Kawartha Highlands lies in an area for which the bedrock geology has been mapped in detail. This interest in bedrock mapping was spurred by the discovery of uranium and other radioactive minerals in the Bancroft area to the northeast in the mid-1950s. Many of the maps show the location of mineral showings, and the location of mineral exploration test pits and drill holes. Many of these unsuccessful exploration attempts occurred within the boundaries of the Kawartha Highlands.

Bedrock Geology

The rocks underlying Kawartha Highlands lie within the Grenville (Structural) Province, one of the major subdivisions of the Canadian Precambrian Shield. The strongly folded and contorted rocks of the Grenville Province are hypothesized to represent the deep-seated roots of mountains built during the collision between two continental masses that culminated over 1100 million years ago (Easton, 1992).

The Grenville Province is subdivided into many units, based on differences in rock type (lithology), geologic history, structural history, metamorphic grade (degree of modification) and age (Easton, 1992). The Kawartha Highlands lies within the Central Metasedimentary Belt, an accumulation of volcanic rocks, metasedimentary rocks and marbles. The belt is further subdivided into a number of terrains, based on the same criteria. The site occurs within the Harvey-Cardiff Arch of the Elzevir Terrane, a unit consisting of deformed metavolcanic rocks, carbonate metasedimentary rocks and a distinctive suite of intermediate intrusive rocks.

The northern portion of the Kawartha Highlands is underlain by a dome of gneissic and migmatitic intrusive rocks known as the Anstruther Mantled Basement Gneissic Complex (Bright, 1980). The southern portion of the site is underlain by another dome of banded migmatite and gneiss known as the Burleigh Gneiss Complex (Morton, 1983). These domes represent the oldest rocks in the region and form the basement on which subsequent sedimentary and volcanic rocks were emplaced. These cover rocks occur today largely as migmatites and gneisses belonging to the Grenville Supergroup suite of rocks. They are very strongly folded and form distinctive curving landform patterns on the landscape. These patterns have been enhanced through glacial and sub-aerial erosion, and are highly visible because of the excellent bedrock exposure.

The significance of the cover rocks in the area is that they host post-tectonic pegmatite and pegmatitic granite dikes and sills, which in turn are host to uranium and other radioactive minerals. Economic concentrations of these minerals are known from the Bancroft area to the northeast of the Kawartha Highlands. The dikes and sills have been the object of exploration activity since the middle of the last century, including many localities within the study area. Economic grades of uranium have not been discovered to date in the immediate area of the Kawartha Highlands.

Middle Ordovician limestone and minor shale of the Gull River Formation (Carson, 1980) occur in the extreme south-western portion of the Kawartha Highlands, although bedrock exposure is poor. Black chert nodules and abundant fossil corals characterize the upper horizons of the unit. The limestone is part of a Paleozoic outlier, an erosional remnant of the southern Ontario Paleozoic plain to the south. The north-facing edges of the outlier exhibit very strong and distinctive sculpting; the result of erosion by powerful, sediment-laden sheetfloods

Bare rock ridges, representative surficial geology of the Kawartha Highlands

beneath glacial ice near the close of glaciation in the region. Fluting and streamlining of landforms also occur on the upper surfaces of the outliers, the result of the same erosional process.

Surficial Geology

The area covered by the Kawartha Highlands is described by Chapman (1975) as consisting of two physiographic units which aptly describe its surficial expression: "bare rock ridges and shallow till" and "shallow till and rock ridges". Bright (1980) estimates that over 60% of the region in which the site is located consists of exposed (bare) bedrock.

The surficial geology of the Kawartha Highlands is dominated by a discontinuous mantle of stony sandy till, the composition of which reflects the local Precambrian bedrock. This type of bedrock-drift complex is common throughout the Shield. In the southern portion of the site, there is virtually no sediment cover, whereas in the northern portion of the study area, sediment cover is more continuous. Besides the stony till on bedrock surfaces, this sediment consists largely of kettled sand and gravel deposits in river valleys and other bedrock lineaments. These valley-fill sediments represent minor deposition of ice-contact outwash at a time when the ice front was in the immediate vicinity of the Kawartha Highlands.

Economic Geology

With the exception of some base metal (gold) prospecting at the turn of the 19th century, there was little interest in mineral exploration in the region until the mid-1950s. A boom in exploration for uranium and other radioactive minerals occurred at that time in the region due to the discovery of uranium-bearing pegmatite dikes in the Bancroft area (Morton, 1983). Occurrences of uranium proved to be uneconomical at that time, and interest waned until the mid-1970s, when known occurrences were re-evaluated through advanced exploration techniques, including pits, trenches and diamond drill holes. In the area of the Kawartha Highlands, uranium occurs predominantly associated with post-tectonic pegmatite and pegmatitic granite dikes within the metasediments (gneisses and migmatites) surrounding the two gneissic domes. Economically viable concentrations of these minerals have yet to be found in the region.

The site provides excellent representation of the wide range of rock types and units present in the Harvey-Cardiff Arch Domain, one of the three subdivisions of the Elzevir Terrane. Because of the superb exposure and pristine condition of the area, this representation is considered to be provincially significant. Representation is made of elements of the Grenville Province basement rocks, and rocks of the Grenville Supergroup, within the environmental theme known as: Helikian Grenvillian Island Arcs, Sedimentary Basins and Continental Drift Environment (Davidson, 1981).

Representation of elements of the surficial geology in the Kawartha Highlands Signature Site is locally significant. Bedrock-drift complexes are common to the region, and are well represented in other protected areas.

4.5.2 Soils (refer to Figure 6)

The soils of the Kawartha Highlands area are composed primarily of materials left behind by glaciers, with ice-scoured, bare rocklands predominate in much of the area. It is likely that intensive logging during the late nineteenth and early twentieth centuries has caused significant soil erosion. Also, extensive wildfires swept through the area in the early part of the twentieth century, burning away much of the shallow organic soils occurring on bedrock outcrops. As a result, both soil quality and quantity have been reduced – very recently on the geological calendar.

According to the Soil Survey of Peterborough County mapping, most of the north-eastern, south-eastern and south-western portions of the Kawartha Highlands are rocklands (or rock outcrops), which may have pockets of shallow sandy till or organic deposits, but are primarily exposed bedrock and excessively drained. A zone of excessively- to well-drained Monteagle sandy loam extends from the east-central portion of the study area near Apsley to the eastern shores of Mississagua Lake, and through much of the north-central portion of the Kawartha Highlands to the north-western limit. Another area of Monteagle sandy loam occurs in the south-central portion of the area, between Crane and Cherry lakes, extending south onto the limestone plain north of Highway 36. The vast majority of the study area is composed of combinations of rockland and Monteagle sandy loam soil types (Gillespie and Acton, 1981).

Minor areas of Wendigo sandy loams occur north of Pencil Lake, north of Bottle Lake and along the south shore of Anstruther Lake, and in narrow strips from the east end of Long Lake south to Big Cedar Lake, and along the northern portion of Mississagua River. Pockets of Tweed sandy loam, derived from marble bedrock, are found northeast of Pencil Lake and along the extreme north-eastern boundary of the area. Wemyss loamy sand soils, which are imperfectly drained, occur between Sucker Creek and Anstruther Lake. Farmington loams and Dummer sandy loams, both of them well drained, are associated with the limestone plain at the southern edge of the area (Gillespie and Acton, 1981).

Organic mucks and peat deposits are found in the seasonal and permanent wetlands that occur throughout the Kawartha Highlands.

4.5.3 Land Types (refer to Figure 6)

The following description of Land Types is adapted from van der Meer (2000):

The Ontario Land Inventory has defined three broad "Land Types" in or near the study area, reflecting the parent materials of the soil categories described above. The Henvey Land Type is predominantly exposed igneous or metamorphic bedrock, described as low base granite, granite 12 gneiss or syenite. It coincides with the extensive rockland and Monteagle sandy loam soil areas, occupying most of Anstruther, Burleigh and Harvey townships.

The Sherborne Land Type, a very low base loamy sand to silty sand, usually with high stone content, is derived from granite, granite gneiss or syenite bedrock. It is generally ice laid (occasionally water laid) till in the form of ground moraine. These very shallow (<30 cm) tills over bedrock are found in the zone

stretching from the east side of Mississagua and Catchacoma lakes eastward to include Gold, Beaver, Bottle and Sucker lakes, to the northwest shore of Anstruther Lake. The Sherborne Land Type coincides with a complex of Monteagle sandy loams, and Wemyss, Wendigo and Chandos loamy sands.

The Limerick Land Type is found on both sides of the study area, from Mississagua Lake north along County Road 507, and from Burleigh Falls along Highway 28, as well as around Fels Lake in the northeast. This loamy sand to sandy loam land type usually has high stone and boulder content derived from low base to calcareous bedrock. It is usually ice laid till, occurring as ground moraine or drumlin. In the study area it coincides with the Wendigo and Chandos loamy sand and Tweed sandy loam soils.

4.6 Life Sciences

Section 4.6 presents excerpts directly from the "Reconnaissance Life Science Inventory of the Kawartha Highlands Signature Site" (Jalava et al., 2001) except where noted (Fish Section). This inventory did not examine fish species or other components of aquatic ecosystems.

4.6.1 Regional Significance

One of the most significant features of the Kawartha Highlands is its location with respect to the transition between two major ecological regions and two climatic regions (Figure 4). The Kawartha Highlands straddles the contact between the southern edge of Ontario's most dominant landform, the Precambrian (Canadian) Shield, and the northern edge of the Paleozoic limestone bedrock that underlies most of southern Ontario. This section of the contact line stretches from the Port Severn area on Georgian Bay to the Frontenac Axis near Kingston. There is also Paleozoic-Precambrian contact in the Manitoulin (La Cloche) area and east of the Frontenac Axis in Leeds & Grenville.

The contact line is one of the most important zones of biological diversity in Ontario, recognized for its high species diversity in breeding birds (Cadman *et al.*, 1987), and reptiles and amphibians (Oldham and Weller, 2000). Many species reach or approach their northern or southern range limits in this transitional area. Northern species include plants such as Jack Pine, Trailing Clubmoss, Spiny-spored Quillwort, Three-toothed Cinquefoil, as well as animals, including a variety of invertebrates, Two-lined Salamander, Black-backed Woodpecker, Olive-sided Flycatcher, Gray Jay, Swainson's Thrush, Moose, Marten and Red-backed Vole. Examples of southern species at or near their northern limits include many vascular plants, such as Walking Fern, Clearweed, Butternut, Poison Sumac, Plantain-leaved Sedge, Zig-zag Goldenrod, Sharp-leaved Goldenrod, and animals such as Western Chorus Frog, Five-lined Skink, Yellow-billed Cuckoo, Yellow-throated Vireo, Cerulean Warbler, Eastern Towhee and Long-tailed Weasel.

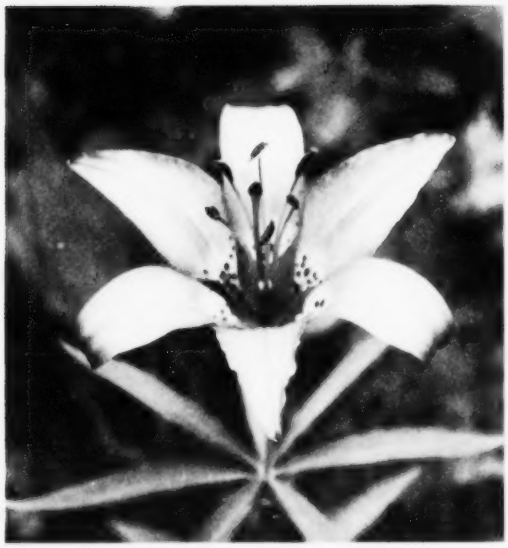
Another key natural heritage value of the Kawartha Highlands is its relatively intact natural landscape, with connectivity to major protected areas to the north (Algonquin Provincial Park), the east (Petroglyphs Provincial Park and the Peterborough Crown Game Preserve) and the west (the Queen Elizabeth II Wildlands Provincial Park). Species with large home ranges, such as wolf, moose and bear, require such intact landscapes to maintain viable populations. These species, and a number of others including Cougar, formerly occurred south of the Canadian Shield in Ontario, but most were extirpated as the forests of this region were cleared.

A busy Kawartha Highlands beaver.

The Kawartha Highlands study area occurs primarily in the "Georgian Bay Fringe" physiographic region (Chapman, 1975), an area of very shallow soils and extensive bare rock knobs and ridges. The widespread open rock barrens support a distinctive assemblage of plant communities characteristic of the Paleozoic-Precambrian transition, comprised of constituent species often with boreal affinities, as well as southern species, many with adaptations to xeric or dry conditions. Red Oak, Eastern White Pine and, more locally, Jack Pine are the most prominent tree species on rock ridges, while lichens, mosses, grasses and forbs predominate on open rock outcrops. The barrens provide nesting habitat for species such as Common Nighthawk and Whip-poor-will, and until at least the late 1980s the Kawartha Highlands supported a small population of Prairie Warbler – a provincially uncommon species with most of its Ontario population concentrated along the south-eastern Georgian Bay coast. The Five-lined Skink, Ontario's only lizard and designated as of "Special Concern", is widespread on the open rock barrens along the Paleozoic-Precambrian contact in southern Ontario, and was found to be relatively common in the Kawartha Highlands during the present study. The provincially rare Secund Rush is also found on these open rock barrens.

Another characteristic feature of the Canadian Shield is its abundance of lakes, streams, treed swamps, thicket swamps, bogs and fens. Beavers play a fundamental role in the dynamics of these wetlands through their 'management' of water flow. Their dams help to form and expand ponds, marshes and swamps, and regulate the water levels of many of the lakes. Many species are dependent on these wetlands for all or parts of their life cycles. Such fauna include the many fish and amphibian species of the region, Beaver, River Otter, Mink, a variety of waterfowl and marsh birds, such as Great Blue Heron, Wood Duck, Hooded Merganser and the regionally rare Ringnecked Duck. Peatland species in the Kawartha Highlands include the provincially rare Marsh St. John's-wort, White-fringed Orchid and Billings' Three-seeded Sedge.

Some of the shorelines of lakes, streams and channels in the Kawartha Highlands support communities of aquatic and shoreline plants with affinities to the Atlantic Coastal Plain. The primary North American range of these species is the coastal plain of the eastern United States and Canada. Disjunct populations occur in the Great Lakes basin and isolated locales elsewhere in eastern Canada. In Ontario, these species are usually found on gently sloping sandy or peaty shores of softwater lakes that have naturally fluctuating water levels. They are believed to have moved inland from the Atlantic coast following glacial retreat. The eastern Georgian Bay region supports the greatest concentrations of these plants in Ontario, and the Kawartha Highlands supports some significant examples of this vegetation type. During the present study, Atlantic Coastal Plain species were found



Wood Lily

in patches of sand or peaty sand on bedrock shorelines, or less frequently, in bedrock crevices, fens and in shallow bays and streams. This flora includes such provincially rare species as Virginia Meadow-beauty, Bayonet Rush, Carey's Smartweed, Snail-seed Pondweed, Twin-scaped Bladderwort and Carolina Yellow-eyed-grass.

The limestone plain supports rich deciduous and mixed forests having species requiring calcium-rich habitats, such as Walking Fern. The deciduous forests also support Butternut (designated as "Endangered"), a tree species that is experiencing precipitous decline throughout its range in North America due to a fungus, *Sirococcus clavigignenti-juglandacearum*, which has most likely been introduced from outside of North America. Butternut is scarce to non-existent elsewhere in the Kawartha Highlands. The limestone plain also sustains what is probably the best example of alvar habitat in Peterborough County. Alvar is a vegetation association that develops on flat limestone or marble bedrock pavements where shallow soils and extreme environmental conditions (such as alternating flood and drought conditions) prohibit extensive tree growth. Alvars are a globally rare vegetation type (Reschke *et al.*, 1999; Brownell and Riley, 2000). Alvars frequently support species more often associated with prairie habitats, such as Hairy Beardtongue, Narrow-leaved New Jersey Tea, New Jersey Tea, and Wood Lily. The provincially rare Sharp-leaved Goldenrod and Secund Rush were discovered at the Kawartha Highlands alvar during this study.

4.6.2 Flora

The vegetation of the Kawartha Highlands is largely intact and continuous, dissected in relatively few places by roads, snowmobile trails and small clearings. The predominant vegetative cover is upland forest, especially mixed deciduous-coniferous forests, in the northern and south-western sections. Deciduous forests are most widespread in the western half of the Kawartha Highlands, while smaller areas of coniferous forest occur scattered throughout the northern and south-western sections. The south-eastern section is dominated by sparsely vegetated exposed bedrock supporting treed and open rock barrens. Open lakes and wetlands occur throughout the site, and are connected by both fast and slow-moving streams and rivers; although in some instances isolated wetlands do also occur. The wetlands tend to be narrow linear features, developed in basins between bedrock ridges, or along stream valleys and floodplains. Both deciduous and coniferous swamps are found here, although they are not extensive cover types. Both are largely absent from the south-eastern portion of the site. Bogs and fens occur throughout the study area, within both the forested and open rock barren landscapes. Aquatic vegetation also occurs throughout the area, along streams and lakeshores, and pond margins. Significant flora is described in further detail throughout Section 4.2.

A Slaty Skimmer, one of the dragonfly species observed within the park.

Lush wetland flora

4.6.3. Fauna

Dragonflies and Damselflies (Odonata)

Seventy-four species of Odonata (26 damselflies and 48 dragonflies) are known to have been recorded from Kawartha Highlands or from within 3 km of the boundary, representing 45 per cent and 77 per cent of the species known to occur in Ontario and Peterborough County respectively (Catling and Brownell, 2000; Jones, 1999b). The Kawartha Highlands Odonata checklist has been compiled from 746 dragonfly and damselfly records. Of the records, 486 were field observations made during 2000 fieldwork. The remaining 260 records were obtained from the Atlas of Ontario Odonata database (OOD, 2001).

Dragonflies and damselflies occupy a variety of aquatic habitats and emerge as adults at various times throughout the spring and summer season, depending on the species. During 2000 fieldwork, an attempt was made to visit as many habitats as possible throughout the summer.

No Odonata species are officially designated as species at risk by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) or by the Ontario Ministry of Natural Resources (COSEWIC, 2000). There are, however, records for 14 provincially rare species (five of which are also considered regionally rare) and an additional four regionally rare species from the Kawartha Highlands.

The Kawartha Highlands is at or near the southern range limits in Ontario for some species (e.g., Lake Darner, Beaverpond Clubtail, Delicate Emerald) and near the northern range limit for several others (e.g., Elegant Spreadwing, Skimming Bluet, Horned Clubtail). The great diversity of aquatic habitat types (e.g., beaver ponds, lakes, rivers, streams, bogs, fens) and the relatively pristine conditions of most of these provide excellent habitat for insects that spend part or all of their life cycles in water. Beaver ponds and lakes provide suitable habitat for a variety of common species as well as the provincially rare Beaverpond Clubtail, at the southern edge of its limited range in Ontario. The many small ponds that are nestled among

the rock barrens are also excellent habitat for many common species and for the Horned and Lilypad Clubtails, both provincially rare. Bogs, such as the Crane Lake bog complex, are home to the Delicate Emerald, at the southern edge of its range here. Kettle type bogs, such as the Beaver Lake Bog and Tamarack Lake, harbour the Amber-winged Spreadwing and the Sphagnum Sprite, both of which are provincially rare. The tiny Elfin Skimmer, North America's smallest dragonfly, also a provincially rare species, is widespread in the Kawartha Highlands, and appears to use not only bogs and fens, but the pools located on rock barrens as habitat. The clear, cool, sediment and relatively pollution-free waters of the lakes and rivers in the Kawartha Highlands result in not only a rich diversity of Odonata, but also a great abundance.

Butterflies (Lepidoptera)

A total of 65 butterfly species is known to have been recorded from Kawartha Highlands or from within 3 km of the boundary. The Kawartha Highlands butterfly checklist has been compiled from nearly 300 butterfly records.

With the exception of the Monarch, which is designated as a species of Special Concern by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) (Brodribb *et al.*, 2001), no species are officially designated as species at risk by COSEWIC nor by the Ontario Ministry of Natural Resources. There are, however, records for two provincially rare and three regionally rare species from the Kawartha Highlands.

Butterfly – Aphrodite Fritillary

The Kawartha Highlands is at or near the southern range limits in Ontario for some species (e.g., Bog Fritillary, Chryxus Arctic) and near the northern range limit for several others (e.g., Silverspotted Skipper, Broad-winged Skipper, Black Swallowtail). The diversity of habitat types (e.g., forests, sedge meadows, bogs, fens, rock barrens) and larval foodplants provide excellent habitat for a variety of butterflies. Wet sedge meadows provide suitable habitat for the provincially rare Mulberry Wing, and for the regionally rare Dion Skipper. The open and semi-open rock barrens provide habitat for the provincially rare Olympia Marble. In addition, the Tawny Crescent, a highly local species in Ontario once considered to be provincially rare, is common in the rock barrens of the Kawartha Highlands. The Bog Fritillary, a regionally rare species, is at the southern-most part of its range in North America in the Kawartha Highlands.

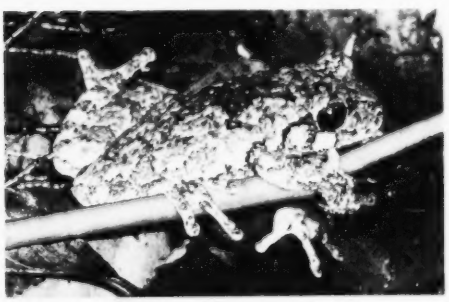
An additional 19 species of butterflies are expected to occur in the Kawartha Highlands based on records nearby. Four of these species are provincially rare (Pepper and Salt Skipper, West Virginia White, Grey Hairstreak and Early Hairstreak).

Amphibians and Reptiles

Twenty-nine species of amphibians and reptiles are known from Kawartha Highlands or from within 3 km of the boundary. During fieldwork conducted in 2000 a total of 24 species was recorded; the presence of an additional 5 species has been documented by earlier fieldwork.

The Kawartha Highlands supports a relatively high diversity of amphibians and reptiles. The southern edge of the Canadian Shield is at or near the northern limit in inland southern Ontario (i.e., away from Georgian Bay) for several species (e.g., Western Chorus Frog and Five-lined Skink). This area is also near the southern range limits of some species (e.g., Two-lined Salamander and Mink Frog). The high proportion of aquatic and wetland habitat in Kawartha Highlands also makes it attractive to many amphibians and reptiles.

Three reptile species occurring in Kawartha Highlands that are provincially rare and tracked by the Natural Heritage Information Centre are the Blanding's Turtle, Five-lined Skink and Eastern Hog-nosed Snake. Two of these species, the Five-lined Skink and Eastern Hog-nosed Snake, have official designations of Special Concern by the Ontario Ministry of Natural Resources and COSEWIC (Brodribb *et al.*, 2001). The Blanding's Turtle, while not yet officially designated at risk in Ontario by MNR or COSEWIC, is considered provincially rare by the NHIC.



Grey Tree Frog

Status Update

Blanding's Turtle and Eastern Hog-nosed Snake

Species at risk designations are assessed each year and are constantly changing in response to threats faced by species at risk. Habitat change, climate fluctuations, and other anthropogenic ("man-made") factors can influence the survival of a species.

In 2004 the Blanding's Turtle and the Eastern Hog-nosed Snake have both been upgraded to threatened status by the Committee on the Status of Species at Risk in Ontario (COSSARO).

Blanding's Turtle is a species of conservation concern throughout much of its range, and has recently been recommended for Threatened status in Ontario (Standing, 2000). One amphibian (Two-lined Salamander) and one reptile (Musk Turtle) are rare in Peterborough County (here defined as known from fewer than 10 county records according to Oldham and Sorrill (1999)). These two species are also discussed in greater detail below. Four species are considered rare in Kawartha Highlands (Red-spotted Newt, Yellow-spotted Salamander, Four-toed Salamander and Pickerel Frog). Species considered rare in Kawartha Highlands are generally known from 10 or fewer records from the study area.

An additional four amphibian and reptile species are known from Peterborough County (Oldham and Sorrill, 1999) and might eventually be found in Kawartha Highlands. There are three Peterborough County reports of Mudpuppy (Oldham and Sorrill, 1999), which is an entirely aquatic salamander that inhabits permanent waterbodies. The Common Map Turtle is known from several large waterbodies in the county, as nearby as Stony Lake, and might occur in some of the larger lakes in Kawartha Highlands. There are two county records for the Spotted Turtle (Oldham and Sorrill, 1999) which has been designated as a species of "Special Concern" by Ontario. Further fieldwork in Kawartha Highlands may reveal the presence of this small and secretive species. The Northern Brown Snake is known from six scattered Peterborough County records (5 reported in Oldham and Sorrill (1999) plus an additional 1999 record), and could easily occur in Kawartha Highlands.

Birds

A total of 176 bird species has been recorded from Kawartha Highlands or from within 3 km of the boundary. Eighty-nine species are confirmed, 32 are probable and 25 are possible breeders, totalling 146 species showing evidence of breeding (51 per cent of the provincial breeding bird list). The Kawartha Highlands bird checklist has been compiled from 2378 bird records. Of the records, 2159 were field observations made during 2000 fieldwork (representing 120 species). The remaining records were gleaned from the literature (Burke, 1999; Cadman *et al.*, 1987; Sadler, 1983) or were gathered from naturalists who have been visiting the area throughout the past 35 years (Baker, pers. comm.; Burke, 2000; Helleiner, 2000; Bell, 2000; Geale, 2000; Hobbs, 2000).

Great Blue Heron, a common visitor of the Kawartha Highlands

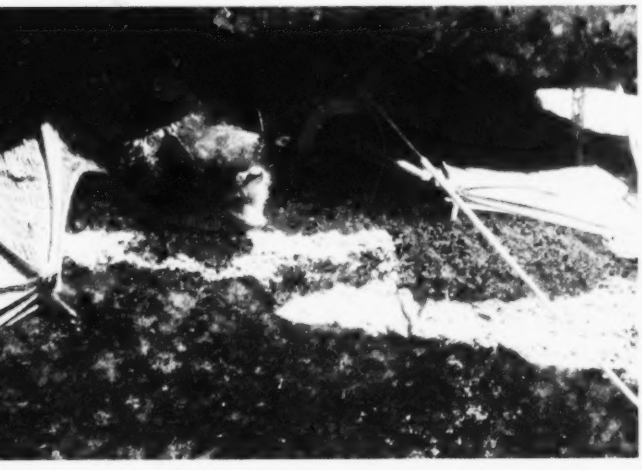
The Kawartha Highlands is near the southern range limits in Ontario of some species of birds (e.g., Black-backed Woodpecker, Gray Jay, Swainson's Thrush) and near the northern range limit for others (e.g., Eastern Towhee). The diversity of habitat types (lakes, ponds, mature hardwood, pine and mixed forests, bog and fen and rock barrens) provides a great variety of breeding habitat for birds. The high proportion of aquatic and wetland habitat makes it an attractive area for species such as Common Loon, Wood Duck, Hooded Merganser and Ring-necked Duck. Several Great Blue Heron rookeries are found within Kawartha Highlands. The mature deciduous and mixed forests support nesting Red-shouldered and Broad-winged Hawks, Barred Owls and Pileated Woodpeckers, species that are often associated with larger natural areas with more extensive forest interior (see discussion in Larson *et al.*, 1999). Numerous species of warblers also breed in these forests, including, potentially, the provincially rare

Cerulean Warbler. The open and semi-open rock barrens provide native habitat for a number of species commonly associated with agricultural fields such as Brown Thrasher, Eastern Towhee and Field Sparrow. In addition, these rock barrens are important breeding sites for Common Nighthawk, Whip-poor-will, Dark-eyed Junco and, at least in the past, Prairie Warbler.

Mammals

Thirty-seven species of mammals are known from Kawartha Highlands or from within 3 km of the boundary, representing 53 per cent of Ontario's total mammal list (excluding non-native and marine mammals).

The Kawartha Highlands is near the southern range limits in Ontario of some species of mammals (e.g., Southern Red-backed Vole, Marten and Moose) and near the northern range limit for at least one (Long-tailed Weasel). The high proportion of aquatic and wetland habitat in Kawartha Highlands also makes it attractive to species such as Beaver, Mink, and River Otter. Because of the large size of the Kawartha Highlands, especially when combined with the adjacent Peterborough Crown Game Preserve, the area is able to support populations of species which require a relatively large home range and/or large portions of contiguous habitat. Such species include Black Bear, Marten, and Moose.



A Brown Bat finds shelter in a protective rock crevice in the Kawartha Highlands.

There are currently no provincially rare mammal species known to exist in the Kawartha Highlands. Two species (Silver-haired Bat and Marten) are rare in Peterborough County.

Because of recent DNA analyses of the wild canids (wolves and coyotes) found in north-eastern North America (particularly those found in Ontario), the taxonomy of this group is under question (Wilson *et al.*, 2000). Proposed taxonomic changes within this group will almost certainly have bearings on the conservation of these animals across their range. As a result, the canids present in Kawartha Highlands are discussed in detail below.

An additional 9 mammal species are known from Peterborough County (Line, 1999) and might eventually be found in Kawartha Highlands. These are: Water Shrew, Pygmy Shrew, Northern Long-eared Bat, Eastern Pipistrelle, Big Brown Bat, Eastern Cottontail, Grey Squirrel, Southern Flying Squirrel and Southern Bog Lemming.

Of these expected species, the Southern Flying Squirrel is designated "Special Concern" by Ontario and the COSEWIC. In Ontario, this species is most common in the Carolinian Forest Zone, but it has been recorded as far north as Parry Sound District and Renfrew County. A specific search (involving live trapping) for this species in areas of Kawartha Highlands with mature hardwood forest, such as in the pre-existing provincial park, may reveal its presence. There are another three species not recorded from Peterborough County but that are known from locations surrounding the county. All three are bats (Small-footed Bat, Red Bat, and Hoary Bat) and are therefore notoriously difficult to detect. All of these species could eventually be recorded in the Kawartha Highlands.

Wild Canid – Wolf/Coyote (Canis sp.): During 2000 fieldwork, tracks of wild canids were seen on at least five occasions. Tracks were recorded on 8 June northwest of the Tuckers Road access, on 12 and 16 June near East Stony Creek, on 20 June near the Mississagua River, and on 16 June east of Pencil Lake. In addition, howling canids (sounding like wolves) have been heard on several occasions during canoe trips in the Kawartha Highlands (particularly in the vicinity of Cox Lake) extending back approximately 10 years (Ben-Oliel, 2000). Local trappers have been trapping canids in the area for many years.

Recent DNA analyses indicate that the wolf found in eastern Canada (*Canis lupus lycaon*) is taxonomically separate from the wolves at the species level in the remainder of Canada, and shows a closer affinity to the endangered Red Wolf (*Canis rufus*) of the southern United States (Wilson *et al.*, 2000). In fact, the genetics indicate that the eastern Canadian wolf is much more closely related to the Coyote (*Canis latrans*) than it is to wolves in the remainder of Canada. DNA analyses of wolves along the southern edge of the Precambrian Shield (such as the Kawartha Highlands) indicate that the wild canids in that area appear to be wolf/coyote hybrids (de Almeida, 2000).

Rather than being considered a subspecies of the Gray Wolf (*Canis lupus*), it has been proposed that the eastern Canadian wolf be designated a separate species (*Canis lycaon*) (Wilson *et al.*, 2000). Such a taxonomic distinction, if accepted, has serious conservation implications. Under the proposed taxonomy, Ontario will be responsible for a significant portion of the global range of this "new" species. The conservation status of the eastern Canadian wolf is currently under review both by the COSEWIC and by the Ministry of Natural Resources.

Whether the canids in the Kawartha Highlands represent wolves or wolf/coyote hybrids is an interesting taxonomic problem. Ecologically, however, they represent top-level carnivores, regardless of what they are

Status Update

Eastern Wolf – *Canis lycaon*.

Since the publication of the Life Sciences Inventory for the Kawartha Highlands, changes have been made to the taxonomy and status of the Eastern Wolf.

DNA examination performed by the Natural Resources DNA and Forensics Profiling Centre at Trent University, has determined that the wolves found in Algonquin Park and regions to the south are a distinct species from *Canis lupis*. These Eastern Wolves (*Canis lycaon*) are more closely related to the red wolf (*Canis rufus*) found in the south.

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) designated the Eastern Grey Wolf to be of special concern in May of 2001. The designation was reached after the committee found insufficient information regarding range of the species and because of hybridization with Coyotes. Habitat change and harvesting were other factors leading to the decision.

Provincial designations are made by The Committee on the Status of Species at Risk in Ontario (COSSARO). COSSARO has also designated *Canis lycaon* of special concern. This was decided in September of 2004.

Eastern Wolf conservation objectives have led to the banning of coyote and wolf harvesting in Algonquin Park and in all townships immediately adjacent to Algonquin Park. The high degree of hybridization between coyote and eastern wolf warrants further study into the taxonomic status of wolves in the Kawartha Highlands.

taxonomically, and as such are a vital part of the ecosystem. The Kawartha Highlands, along with the Peterborough Crown Game Preserve to the east, represents a relatively large piece of contiguous habitat and is therefore an important core area for these animals.

Elk: Elk have been re-introduced to the Bancroft District and may eventually be recorded in the Kawartha Highlands. An ongoing monitoring program currently tracks the movement of the Elk and will become an important partnership should Elk inhabit the Kawartha Highlands. At this time Elk are not believed to interact negatively with other native ungulates or to exert damaging pressure on native floras. Further information will be available as studies continue on the re-introduction program.

Fish *(refer to Figure 7):* The Precambrian Granite underlying most of the park lacks the extensive carbonate material found in the limestone plains to the south. Therefore, lakes found on the shield are slightly acidic and have less buffering capacity than lakes located on limestone plains. The large lakes in the area are oligotrophic (nutrient poor) clear water lakes that support species of sportfish such as Lake Trout, Largemouth Bass, Smallmouth Bass, Walleye, and Brook Trout. Some of the lakes in the area have been stocked with Splake. Eutrophic (nutrient rich) lakes can be found throughout the Kawartha Highlands in locations determined by topography, and are often influenced largely by beaver activity. These eutrophic lakes are characterized by shoreline bog wetlands and species of fish such as Largemouth and Smallmouth Bass, Walleye, Brook Trout, Muskellunge, and Northern Pike.

The tradition of fishing has occurred for generations in the Kawartha Highlands. Naturally reproducing Lake Trout populations are managed by controlling the harvest at sustainable levels. This is maintained by the implementation of seasons and/or slot limits. To protect the breeding adult Lake Trout, slot size limits are used. Lakes

Angling in the Kawarthas is a generations old tradition.

that have trout populations supported by stocking are classified as "Put-Grow-and-Take" fisheries. These lakes are stocked to take the pressure off naturally reproducing trout lakes.

Table 6 documents the history of fish stocking for lakes in the Kawartha Highlands area. MNR fish stocking is guided by the following management principles:

- Fish stocking programs are based on sound management practices and the most current science and information,
- Use of artificially-reared fish should not be used as an alternative to the protection/ restoration of habitat or the regulation of harvest,
- Fish stocking must be conducted in an ecologically responsible manner,
- There is a biological limit to the number of fish a water body can produce and/or support. Stocking beyond this natural limit will not make a significant contribution to angler harvest but could destabilize the fish communities, and

Mississagua River

- Biological diversity of native fauna should be maintained and regulatory tools should be used to prevent the introduction of undesirable fish species.

Walleye have been introduced to Copper Lake, although this was not an authorized introduction. They have since made their way downstream into Rathbun and Anstruther lakes, where they have established self-sustaining populations. Further downstream migration is anticipated, with potential for competition with naturally reproducing lake trout populations.

Many factors influence the fish populations in the Kawartha Highlands. Ministry of Natural Resources Ontario Sportfishing Regulations are intended to protect the sustainability of natural fish populations by controlling angling pressure. Indirect influences on Kawartha Highlands fish populations take the form of acid rain, climate change, as well as introduced exotic and invasive species. Continued monitoring is required to promptly identify the occurrence and impacts of these factors so that appropriate management actions can be taken.

Historic zooplankton information is available for Turtle Lake in Burleigh Township, with a total of 67 taxa (groups of species) recorded for the survey period between1981-1983. Further inventory and monitoring of zooplankton and benthic organisms (flora and fauna of the water bottom) in other lakes representative of the area will be required to gain a better understanding of the aquatic ecosystems of the Kawartha Highlands. There are many opportunities for future research on aquatic ecosystems within the Kawartha Highlands.

A partnership with the OMOE has been developed that allows for timely identification of changes in water quality. The Provincial Water Quality Monitoring Network (PWQMN) can help in early detection of water quality changes that could affect fish populations. Another component of the partnership involves the Ontario Benthic Biomonitoring Network (OBBN) in the annual assessment of benthic organisms to determine species abundance and richness. This assessment can help detect adverse changes at the base of aquatic food webs, and can be used as indicators of overall watershed health. Locations for these monitoring sites are at the Stoney Creek outlet on Bottle Lake and at Anstruther Dam at the outlet of Anstruther Lake.

Table 6: Fish Stocking History

Brook Trout – BT; Large Mouth Bass – LM; Lake Trout – LT; Small Mouth Bass – SM; Rainbow Trout – RT; Muskellunge – M; Splake – S

		Year and Number of Fish Stocked								
Waterbody	Species Stocked	2000-2005	1990-1999	1980-1989	1970-1979	1960-1969	1950-1959	1940-1949	1930-1939	1920-1929
Shark L	Splake (S)	2003-2400 2002-2500	1999-2400 1998-2400 1996-2200 1992-2300 1991-2400 1990-1200							
McGee L	Lake Trout (LT)	2003-800 2001-800	1999-800 1997-800 1995-800 1993-700 1991-400 1990-400	1985-400 1981-400	1977-800 1971-1000 1970-750	1969-900 1968-1000 1965-1320 (BT) 1961-600 (BT) 1960-2000 (BT)	1955-1200 (S) 1954-500 (S)			
Triangle L	Lake Trout (LT)	2003-400 2001-400	1999-400 1997-400 1995-400 1993-700 1991-400 1990-400	1987-400 1985-400 1981-460	1977-450 1972-1000	1968-1250				
Poplar L	Splake (S)	2003-2100 2001-2100	1999-2100 1997-2100 1993-2100			1964-600 (BT)				
Cox L	Lake Trout (LT)	2003-850 2001-850	1999-850 1997-850 1995-850 1993-1150 1991-1000	1988-850	1972-1000	1968-1000 1966-1200		1949-6000 (SM) 1948-1000 (SM)	1939-5000 (SM)	
Loon Call L	Splake (S)	2003-1100 2001-1100	1999-1100 1997-1100 1992-4600 1990-3100	1988-4000 1986-3500 1984-2830 1983-600 (LT) 1981-600 (LT)	1977-600 (LT) 1974-1000 (LT) 1973-1600 (LT) 1971-1500 (LT) 1970-1500 (LT)	1969-1350 (LT) 1968-2000 (LT) 1967-1000 (LT) 1966-1200 (LT)				

Continued on page 54.

Fish Stocking History *Table 6 continued.*

Brook Trout – BT; Large Mouth Bass – LM; Lake Trout – LT; Small Mouth Bass – SM; Rainbow Trout – RT; Muskellunge – M; Splake – S

		Year and Number of Fish Stocked								
Waterbody	**Species Stocked**	**2000-2005**	**1990-1999**	**1980-1989**	**1970-1979**	**1960-1969**	**1950-1959**	**1940-1949**	**1930-1939**	**1920-1929**
Rathbun L	Lake Trout (LT)	2004-1100 2003-1100 2001-1100 2000-1100	1999-1100 1997-100 1996-1100 1995-1100 1993-1100 1992-1100 1991-1100 1990-1100	1988-1100 1987-1100 1985-2200 1983-2300 1981-2300	1977-2300 1974-2000 1973-3200 1970-1500	1969-1350 1967-2000 1966-1200 1965-1600 1963-500 1962-500 1961-500				
North Rathbun L	Splake (S)	2003-2400 2001-2400	1999-2400 1997-2400 1995-2400 1993-2400 1991-2300		1973-3200 (BT)					
Nixon L	Splake (S)	2003-500 2001-500	1999-500 1997-500 1995-500							
Lake #71	Brook Trout (BT)	2004-400 2002-400 2000-400	1998-400 1996-400 1990-400	1988-700 1986-500 1984-500 1983-500 1982-500 1980-500	1978-500 1974-400 1972-400 1971-200 1970-400					
Little Anstruther L	Lake Trout (LT)	2004-400 2003-400 2001-400 2000-400	1999-400 1998-400 1997-400 1995-400 1993-400 1991-400 1990-400	1987-400 1985-500 1981-500	1977-500 1975-400 1974-500 1973-600 1971-1000	1969-1800 1968-1800 1967-750 (RT) 1965-750 (RT) 1964-650 (RT)				
Stethan L	Brook Trout (BT)	2004-800 2002-800 2000-800	1998-800 1996-800 1992-1000 1990-800	1988-800 1986-850 1984-900 1982-900 1980-950	1978-950 1976-500 1975-500 1974-1000 1973-750 1972-600 1971-400 1970-800	1969-350 1967-1000 1968-500 1964-450				

Historically Stocked Lakes *Table 6 continued.*

		Year and Number of Fish Stocked								
Waterbody	**Species Stocked**	**2000-2005**	**1990-1999**	**1980-1989**	**1970-1979**	**1960-1969**	**1950-1959**	**1940-1949**	**1930-1939**	**1920-1929**
Serpentine L	LM Bass					1968-117 1967-76				
Copper L	LM Bass					1968-118 1967-76				
Anstruther L				1989-5000 (LT) 1987-3300 (LT) 1986-3300 (LT) 1985-2000 (LT) 1983-2000 (LT) 1981-10.000 (LT) 1980-5000 (LT)	1977-10.000 (LT) 1975-4500 (LT) 1971-2500 (LT)	1969-2250 (LT) 1968-3500 (LT) 1967-3000 (LT) 1966-2100 (LT) 1964-1100 (LT) 1963-2000 (LT) 1962-2000 (LT) 1961-1000 (LT)	1956-1250 (BT)	1949-5000 (SM) 1948-2000 (LT) 1947-1000 (LT) 1946-4250 (LT) 1946-400 (SM) 1945-5000 (LT) 1945-100 (SM) 1944-500 (BT) 1944-4500 (LT) 1944-150 (SM) 1943-2000 (LT) 1942-10.000 (LT) 1942-500 (SM) 1941-10.000 (LT) 1941-500 (SM) 1940-30.000 (LT) 1940-1800 (SM)	1939-30.000 (LT) 1937-25.000 (BT) 1932-30.000 (BT) 1931-25.000 (BT)	1929-1000 (BT)
Sucker L			1993-400 (RT) 1991-400 (RT) 1990-1200 (LT)	1989-2300 (LT) 1987-1200 (LT) 1985-1400 (LT) 1981-2850 (LT)	1975-2000 (LT) 1972-2000 (LT)	1967-1955 (BT) 1967-5700 (RT) 1966-1200 (BT)	1959-3500 (BT) 1957-3500 (BT) 1956-4500 (BT) 1955-3000 (BT) 1954-1000 (BT) 1953-1000 (BT) 1952-1000 (BT)			

Continued on page 56

Historically Stocked Lakes *Table 6 continued.*

		Year and Number of Fish Stocked								
Waterbody	Species Stocked	2000-2005	1990-1999	1980-1989	1970-1979	1960-1969	1950-1959	1940-1949	1930-1939	1920-1929
Wolf L	Muskellunge – M			1987- 20,000 (M) 1986- 40,000 (M) 1985- 40,000 (M) 1984- 40,000 (M) 1983- 40,000 (M) 1982- 40,000 (M) 1980- 40,000 (M)	1979- 40,000 (M) 1978- 40,000 (M) 1977- 40,000 (M) 1976- 40,000 (M) 1975- 40,000 (M) 1974- 40,000 (M) 1972- 50,000 (M) 1971- 15,000 (M) 1970- 30,000 (M)	1969- 40,000 (M) 1968- 30,000 (M)				

5.0 CULTURAL RESOURCES

5.1 Defining Cultural Heritage

(from: A Class Environmental Assessment for Provincial Parks and Conservation Reserves, Appendix 1)

Cultural Heritage Resource: Any resource or feature of archaeological, historical, cultural, or traditional use significance. This may include archaeological resources, built heritage or cultural heritage landscapes. Heritage resources and features are usually identified by federal or provincial agencies, municipalities, municipal heritage committees or other equivalent local heritage groups, and local and regional band councils. Some heritage resources and features are legally "designated", and can be found in official sources. Some may only be inventoried or listed, either officially, or by interested stakeholders. Others have never been identified, although this does not necessarily diminish their cultural significance.

- ***Archaeological Resource:*** means the remains of any building, structure, activity, place or cultural feature, which because of the passage of time is on or below the surface of the land or water. Significant archaeological resources are those which have been identified and evaluated and determined to be significant to the understanding of the history of a people or place. The identification and evaluation of this resource is based upon an archaeological assessment.

- ***Area of Archaeological Potential:*** an area with medium or high potential for the discovery of archaeological resources. The potential is based on the presence of a wide range of geographic and historical features, which influenced past settlement. Archaeological potential is confirmed through archaeological assessment, and refers to the probability, based on a wide range of information sources, that a significant archaeological site will occur.

- ***Identified Archaeological Site:*** a registered, designated or identified (existing evidence) site that is contained within the MNR-NRVIS values information data base and/or is a locally identified site that is deemed to be a cultural heritage resource. A registered archaeological site is identified on a Ministry of Culture site registration form with an assigned Borden Number.

- ***Traditional Use Site:*** a geographically defined area supporting current or past human use as a gathering area, spiritual site, place of worship or cemetery.

- ***Built Heritage Resource:*** one or more buildings, structures, monuments, installations, or remains associated with architectural cultural, social, political, economic or military history.

- ***Cultural Heritage Landscape:*** a geographic area of heritage significance, which has been modified by human activities. Such an area is valued by a community and is of significance to the understanding of the history of a people or place.

5.2 History

[this section adapted from van der Meer, 2000]

Very little archaeological survey work has been done in and around the Kawartha Highlands, and so there is little direct evidence of aboriginal use and occupation of the area. However, an understanding of pre- and post-contact aboriginal activities in Southern Ontario and archaeological evidence in the region clearly suggest that this area would have been used by aboriginal people, perhaps not continuously, but repeatedly over a long period of time. After the retreat of glacial ice from Southern Ontario about 11,000 years ago, when the environment would have been sub-arctic tundra, the first people in evidence through archaeological sites are known as Palaeo-Indians (11,000-7000 Before Present (BP)). These hunters of big game, such as caribou, are known only by evidence from their campsites on the shorelines of post-glacial Lake Algonquin. With changing conditions, (namely the further retreat of glaciers, and the moderating of the Southern Ontario climate) the Palaeo-Indian cultures traasformed into the archaic cultures (7000-3000 BP).

There are two distinct archaic cultures that developed in Ontario:

- the Shield Archaic in Northern Ontario, hunters and fishers, whose evidence along waterways suggest they had water craft, most likely the birch bark canoe; and
- the Laurentian Archaic in Southern Ontario who hunted and gathered a wide range of foodstuffs. Evidence from Laurentian sites suggests that these people were active traders, with a wide trade network that included their northern neighbours.

It is probable that the Shield Archaic cultures gave rise to the Algonkian speaking peoples, and the Laurentian Archaic to those speaking the Iroquoian languages.

The arrival of pottery in archaeological sites results in the identification of the Woodland Period (3000 BP to European contact). For convenience archaeologists divide this into the Initial and Terminal Woodland Periods.

The Initial Woodland Period (3000-1000 BP) is represented by 5 separate cultures in Ontario. The Laurel culture occupied Northern Ontario. In Southern Ontario the Point Peninsula culture occupied the area from Georgian Bay and Lake Simcoe easterly through Quebec and New York. The Saugeen culture occupied the area from Lake Huron to Lake Simcoe, and the Princess Point culture occupied lands north of Lake Erie. Evidence of the Meadowbrook culture is limited, and suggests they existed primarily outside of Ontario.

The Point Peninsula people are the ones most likely to have been found around the Kawartha Highlands. A number of archaeological investigations have identified campsites and burial grounds of the Point Peninsula people, and this evidence suggests they were groups of hunters and gatherers who seasonally occupied sites associated with the ebb and flow of their food sources. Their burial practices evolved with the influence of the Hopewell culture from the south; this is best represented at the Serpent Mound site at Rice Lake, south of Peterborough.

The Terminal Woodland Period (1000 BP to European contact) is represented in Ontario by two major cultural groups. In Northern Ontario the Algonkian speaking groups who became the Cree, Ojibwa and Algonquin, and in Southern Ontario, the Ontario Iroquois became the Huron, Petun and Neutral.

A wealth of archaeological information in Southern Ontario shows that the Ontario Iroquois began practising agriculture based on corn, but supplemented by hunting and fishing. They began to utilize palisaded villages, and lived in larger groups in long houses. By the time of European contact their agriculture included corn, beans, squash, sunflowers and tobacco, and they were represented in Ontario by the Neutral, Huron and Petun.

The focus on agriculture meant that the poor and shallow soils of the southern Canadian Shield probably held less interest for the Ontario Iroquois than they did when hunting and gathering was the main focus of their predecessors' lifestyle. It is likely that Algonkian speaking people extended southerly as far as the Shield does. Primarily hunters and gatherers, living in small nomadic groups, the Algonkians have left behind less archaeological evidence than the Ontario Iroquois.

European contact with the "new world" either came at a time when the various Iroquoian groups were warring amongst themselves, or perhaps, competition for trade initiated this conflict (Colden, 1747). Whichever was the case, in the mid-1600s a confederation of Five Nation Iroquois from the south displaced the native peoples of Southern Ontario (including the various Ontario Iroquoian groups and the Algonkians of the south shield and Ottawa Valley) and exercised control over the region as a hunting territory. A population of Iroquois occupied the shores of Lake Ontario inland to Rice Lake. These people likely abandoned their interests in the area by 1700, when the Mississagua, an Algonkian speaking group from the northwest, occupied the area. Mainly hunters, fishers and gatherers, they lived nomadically, not establishing large villages as the agricultural Iroquois had.

This somewhat conjectural background shows that there is a possibility that the Kawartha Highlands and its immediately surrounding region was used by a succession of cultures, primarily for activities associated with hunting and gathering, as well as travel. These activities do not leave as much archaeological evidence as large villages but they are still apt to be found through systematic surveys. According to Chris Andersen (2000), Regional Archaeologist for the Ministry of Citizenship and Culture:

"The kinds of activities that were certainly conducted but would have left the least evidence, would be the things like the actual food harvesting activities such as hunting, fishing, and gathering (nuts, berries, other foods), though the food-processing activities associated with these tasks would leave evidence in the ground. Similarly, portaging as an activity leaves little trace, but the portage routes themselves commonly have landing sites and campsites associated with them at either end. Canoe building was almost certainly practised but, again, would have left little easily recoverable evidence. The tools used in that activity might, however, be found in campsites. Religious activities might not be well reflected in the archaeological record, though there may very well be other pictographic sites (like the Peterborough Petroglyphs) located within the park, and so on..."

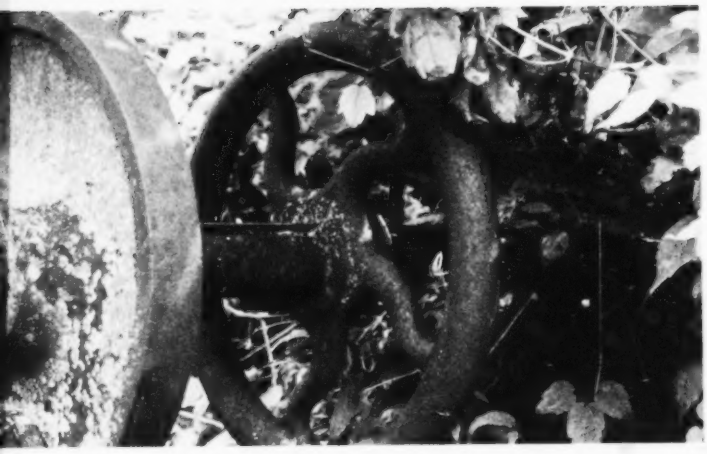
The only two confirmed archaeological sites within the Kawartha Highlands are at the north end of Bottle Lake (section 5.4.1), although there are several known sites in the surrounding region. The entire area has high archaeological potential; there may be several sites that have not yet been found, because there has been no systematic study completed to date.

The first European contact in the region around the Kawartha Highlands is believed to have occurred when Samuel de Champlain and his soldiers accompanied a Huron war party along the lakes that now comprise the Trent – Severn Canal system. Very little other European activity is recorded in the area throughout the seventeenth and eighteenth centuries. The major fur trade routes, during this period, bypassed the area on the north along the Ottawa – Mattawa – French Rivers, or on the south along the Great Lake shoreline routes.

Pioneer settlement started in Upper Canada around the turn of the nineteenth century, and it concentrated along the water routes. Settlement on lands along the Lake Ontario shoreline was followed by a period of settlement in the south half of Peterborough County starting in 1818. In order to allow this settlement to occur a series of treaties with the Mississauga and Chippewa peoples occurred, including the Rice Lake Treaty or Treaty 20 in 1818. Settlement followed the Otonabee River, and centred on what is now Peterborough and the eleven townships south of the Kawartha Lakes. Very little settlement occurred north of the Kawartha Lakes until townships were surveyed in the mid century, and colonization roads were developed to encourage a northerly movement of settlers.

Lumbering for square timber preceded settlement into the northern townships. The Trent Valley square timber industry ran from about 1820 to 1880. From about 1840 to 1880 it was utilizing material from north of the Kawartha Lakes. There was also a sawn lumber industry going on in the area, starting about 1840. While the squared timbers generally went to Great Britain and Europe, the market for sawn lumber was both local and in the United States. Several mills were built in the region to produce sawn lumber (Poole, 1867). They include one at Buckhorn (1830, saw and grist mill), one on the Mississagua River (Scott's Mill, 1858), and a second mill in Buckhorn (1878) which are probably the closest to the Kawartha Highlands. As logs were transported by water as much as possible, many lakes, rivers and creeks had "improvements" made to them to improve water levels and flows. Remnants of old loggers' dams can still be found within the Kawartha Highlands on Rathbun Lake, and between Cherry and Stoplog lakes, and most rapids on the Mississagua River indicate some evidence of damming, chutes, or channelization.

In efforts to encourage the spread of settlement northward, the Buckhorn, or Government Road, was developed north through Harvey and Cavendish townships, with construction starting in 1866. It was a tortuous route, over the rock and around the wetlands of Cavendish, and very little good farm land lay along its route. On the other side of the Kawartha Highlands, the Burleigh Road had begun in 1860, and was then reconstructed in 1865 because it deteriorated so quickly. The first few miles of this road also had to contend with the rocky ridges and numerous wetlands, but then it joined the Eels Creek valley, where construction was easier, and the land somewhat more promising for settlement. Around 1880, these two roads, and the communities of Buckhorn and Burleigh Falls were joined by the "Oregon Trail", another road over rock and around water. Until then, connection between the two communities was by water, or along logging "tote" roads (Brunger, 1992).



Remnants of milling operations can be found throughout the Kawartha Highlands.

Following the construction of these roads, the population of the northern townships increased, but only until the turn of the century, when it began to decline again (Table 7).

Although the farmland of the northern townships was not good, a symbiotic relationship with the lumber industry gave lumbering the seasonal labour it needed, (many farmers and their horses were hired for lumbering) and the farmers an outlet for their farm produce. When the lumber industry came down from its peak, around the turn of the century, these rural properties could no longer support their families. Hence, partially, the general decline in population after 1900.

During the last couple of decades of the 1800s and into the 1900s, tourism became important on the Kawartha Lakes. Resort hotels, private cottages and farm holidays provided accommodation for mostly American tourists. These were primarily fishing vacationers, and much of the orientation was towards the larger Kawartha Lakes. However, the interior lakes were also destinations for guided fishing trips, and some of the trails that can still be found in the Kawartha Highlands were cart trails for fishing expeditions to such areas as Turtle (Bellamy, 1984), Elm and McGee lakes in Burleigh Township.

After the Second World War, with the opening up of some of the "back-country" lakes for cottage lots, cottaging became important to this area. Large cottage communities have developed on the group of lakes accessible from County Road 507 (Catchacoma, Mississagua, Gold, Beaver, and Pencil), on Coon, Big Cedar and Beaver lakes at the south end of Burleigh Township, and on Anstruther, Wolf and Loon Call lakes accessible from Highway 28 near Apsley. Long and Loucks lakes in Burleigh Township are also cottage lakes, although they don't have the numbers or the density of shoreline properties that the others do.

In 1819, a military canal system was proposed, that would link the Ottawa River and the Rideau Canal through Lake Ontario to Georgian Bay. It was slow getting started, and proceeded in fits and starts throughout the nineteenth century. Some of the earliest works were on the Kawartha Lakes sections, and by 1887 water traffic could move from Lakefield to Coboconk and Port Perry. By 1904 the Peterborough lift lock was complete, by 1907 the Kirkfield lift lock and the canal to Lake Simcoe was complete, and by 1918 the system was complete from Washago to Lake Ontario. Addition of a marine railway on the Severn River section completed the whole Georgian Bay to Lake Ontario canal system by 1920. It never experienced the military use for which it was intended, and commercial traffic never materialized to any extent after it was complete. However, it did become a significant recreational waterway, for both travelling visitors and the cottage communities that developed around the lakes and rivers of the system.

The Trent-Severn Canal System has no navigable water link providing for recreational boating to the Kawartha Highlands, but it does have an impact on the Kawartha Highlands. As a means of providing an adequate water supply, about 70 lakes in the northern part of Peterborough and Haliburton Counties were acquired as reservoirs by the Federal Government in 1906. A system of dams was installed by 1915 as a means of regulating inflows, thereby maintaining the levels of navigation lakes, and water flow in the Otonabee and Trent Rivers. A series of stone dams found on Stoney Creek were part of this system of regulating water levels and still remain under Federal ownership. A dam at the outlet of Bottle Creek is maintained by the Ministry of Natural Resources, but managed by agreement for the Trent-Severn Waterway, and the Mississagua Lake Dam is owned and operated by the Trent-Severn Waterway. Anstruther Lake Dam is also used to control water levels in the Trent-Severn and is operated by the Trent- Severn Waterway.

Table 7: Population (1851-2001)

Census Year/ Township	Harvey	Burleigh-Anstruther	Galway-Cavendish
1851	50	no data	no data
1861	No data	no data	430
1871	670	720	520
1881	1110	1380	790
1891	1160	1520	no data
1901	1200	690	no data
1911	1035	640	340
1921	935	460	430
1931	940	530	400
1941	930	570	420
1951	950	750	360
1961	890	980	270
1971	1080	1000	250
1981	2200	1070	400
1991	3150	1330	730
2001	3708	1517	664

5.3 Inventory of Cultural Resources

In 2002, Archaeological Services Inc. (ASI) was contracted by the Ministry of Natural Resources to conduct an assessment of cultural heritage resources within the Kawartha Highlands and produced a report entitled "Kawartha Highlands Signature Site Cultural Heritage Assessment/Reconnaissance (Archeological Services Inc., 2003). The following are excerpts directly from this report.

5.3.1 Registered Archaeological Resources

Only two registered sites are known within the proposed boundaries of the Kawartha Highlands as currently defined. The **Bottle Beach site** is located on the shore of Bottle Lake. Material collected from the surface of the site by Tom Ballantine, of the Huronia Highlands Museum, includes a scraper fragment, a ground stone celt preform and lithic debitage. Ballantine noted that the site has been damaged by fluctuating water levels, although he suggested that there was potential for the presence of additional deposits on the terrace above the beach (OASD Site Record Form, 1996). An October 2002 visit to the site carried out during this study, revealed additional impacts to the site area as a result of camping activities, mainly in the form of heavy pedestrian traffic and subsequent erosion.

The **Levis site** is also located on the shore of Bottle Lake. Ballantine collected a waterworn worked slate fragment, probably a knife, a chert scraper, and some chert debitage from the site. Similar disturbances related to camping were observed at the site in October 2002. It must be noted that the general paucity of archaeological sites in the study area is directly related to the lack of detailed archaeological survey in the area, as opposed to being a result of any lack of inhabitation or land use, either before or after European settlement.

5.3.2 Unregistered Pre-Contact Archaeological Resources

One unregistered site is represented by the recovery of a core fragment of Balsam Lake chert and a utilized or retouched shatter fragment of Trent Valley chert recovered from a locale on the north side of the narrows between Mississagua Lake and Gold Lake (Ballantine, 2002).

5.3.3 Post-Contact Archaeological/Built Heritage Resources

The assembly of site location data for cultural resources (excluding pre-contact archaeological sites) was carried out through consulting archival sources, published histories and knowledgeable informants, the latter during the course of a helicopter flight over the study area on December 5, 2002. This has provided a preliminary inventory of built heritage features that exist within the Kawartha Highlands and provides an indication of the types of post-contact activities that are represented by physical and often visible remains within the Kawartha Highlands. Lumbering was the most significant activity within the study area, a factor that is reflected in the inventory [*Inventory includes logging camps, depots, rock dams and mills, log flumes and a quarantine camp for loggers afflicted with tuberculosis*]. A total of 20 abandoned mine and quarry sites have been inventoried as well, based on information provided by the Ontario Ministry of Northern Development and Mines. The latter, however, may not include the remnants of any poorly documented nineteenth century mining activities that may have occurred in the Kawartha Highlands region, as they comprise only those sites registered under the *Mining Act* or the *Aggregate Resources Act*.

5.4 Threats to Cultural Resources

As noted previously, cultural heritage resources are generally scarce, fragile, and non-renewable. Two major elements of the environment pose threats to these resources:

- **natural forces** may result in numerous deleterious effects to heritage resources: the flooding and washout of archaeological sites by watercourses; snow loadings on the roofs of abandoned built heritage features result in their collapse; and fire's effects on the landscape erase or substantially alter important places or settings; and

- **human activity** may also result in adverse effects: looting, while not only illegal, disrupts important archaeological sites; vandalism destroys built features; over-visitation by tourists or site seers may lead to the degradation or attrition of a valued feature; and imprudent planning is capable of directing development to inappropriate landscapes or settings. Human development activity beyond the limits of the Kawartha Highlands and over which OMNR has no direct control (e.g., the operations of the Trent-Severn waterway) may result in adverse impacts as well.

Specifically, each type of heritage resource possesses distinctive attributes. What may be an appropriate management strategy for one type of resource may be wholly inadequate for another:

- **archaeological sites** are susceptible to degradation or attrition through human or natural forces including aggregate extraction, road construction, changing water levels, forestry activity, continued occupation (e.g., the use and maintenance of modern camp sites where these and archaeological sites coincide), and any other activity that involves disturbances of soil and bedrock.

- **traditional use sites and areas** may be susceptible to natural landscape changes (e.g., fluviology, fires, etc.) and ecological successions may well account for loss or degradation of these features. Areas may be susceptible to degradation or attrition through human forces including aggregate extraction, road construction, altering water levels, forestry activities, cottaging and any activity that involves the introduction of non-native uses and non-native development.

- **built heritage remains** may be susceptible to destruction (i.e., demolition) or attrition (i.e., lack of maintenance), as well as any activity that involves disruption of a building's setting or context.

- **cultural landscapes** may be susceptible to degradation or attrition through human or natural forces, chiefly through inappropriate changes to the landscape, unacceptable site development and the loss of component features.

6.0 RECREATIONAL RESOURCES

Rathbun Lake, part of the Serpentine Lake canoe route.

The capability of the Kawartha Highlands to attract visitors to the area based on its recreational features is very high. People can experience numerous activities all in the same location including, but not limited to, backpacking, nature appreciation, canoeing, fishing, boating, hunting, snowmobiling and skiing. The scenic attractiveness of the Kawartha Highlands enables one to easily forget that it is located in Southern Ontario. The scenery is often compared to Georgian Bay, with the associated rock outcroppings, cliffs, and shoals. The convenience of being very close to major city centres such as Peterborough, Toronto, and Kingston adds to the attraction for visitors. The area offers a semi-wilderness experience and is home to a variety of flora and fauna.

6.1 Water Bodies

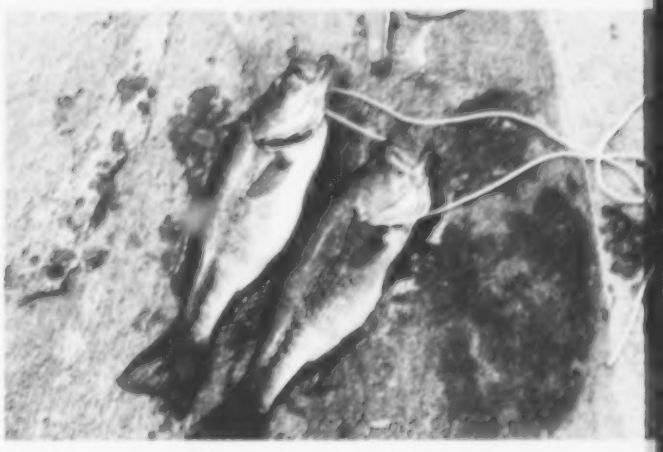
The Kawartha Highlands hosts many lakes, rivers, streams, and wetlands that provide ideal opportunities for activities such as wildlife viewing, hunting, and fishing. The area also provides boating opportunities, with canoe routes that have many campsites for day-use or overnight stays. In the winter season, water bodies are often used for snowmobile travel throughout the area. The many water bodies in the Kawartha Highlands and the ease of access to them plays a major role in the type of recreational activities that attract visitors to the area.

6.2 Trails or Routes

The Kawartha Highlands has a network of unofficial walking and hiking trails, ATV and snowmobile trails, as well as several established canoe routes and portages. There exists the potential for developing multi-use trails, where compatible activities can be undertaken.

There are several well-used canoe routes in and around the Kawartha Highlands. Campsites which are marked and outfitted with a privy can be found along these routes and the portages are generally well marked. The park offers flat-water and white-water opportunities for both novice and advanced canoeists. Numerous lakes can be accessed by means of a portage, which makes the Kawartha Highlands a desirable location for those interested in routes offering solitude and adventure.

The multitude of trails in the Kawartha Highlands and the diversity of the landscapes provide excellent opportunities for various recreational activities in all seasons. There is the potential to have single use trails in specific locations as well as multi-use trails for compatible activities. There is great potential for interpretive trails, offering educational opportunities for school groups and nature enthusiasts.



Destined for the frying pan.

6.3 Sport Fish *(refer to Figure 7)*

Both cold and warm water sport fishing opportunities are found throughout the Kawartha Highlands. Cottage residents and visitors alike can enjoy fishing from shore, or launching a boat on one of the many water bodies. Lake Trout, Smallmouth Bass, and Largemouth Bass are the predominant sport fish located in many of the lakes in the area.

Year round opportunities for angling exist, as many of the lakes are accessible by snowmobile in the winter. Ice fishing does occur in the winter months but is controlled by numerous slot limit regulations. Many lakes are accessible by motorboat, with rentals available at the marinas or lodges located within and adjacent to the Kawartha Highlands. Backcountry fishing occurs mainly from canoes but also from the water access cottages that have motorboats located at their properties. Many of the rivers and streams scattered throughout the area offer opportunities for fly fishing.

Portage trail between Sucker Lake and Bottle Lake

Fox Snake

6.4 Wildlife

As previously mentioned, there is a high diversity of insects, fish, amphibians, reptiles, birds, and mammals in the Kawartha Highlands, several of them species at risk. This high species diversity is attributed to the Kawartha Highlands being in the contact zone between the Canadian Shield and the limestone plains to the south. The numerous species that can be found in this area provide significant opportunities for wildlife viewing and environmental education. For the hunter, there is a variety of small and large game mammals.

6.5 Exposed Bedrock

The Kawartha Highlands encompasses a large expanse of land with many unique features. One of these features is that the area is located in the transition zone where the St. Lawrence Lowlands meets the Canadian Shield. In this transition zone one will find exposed granitic bedrock that is consistent with the surrounding landscape. Rockland occupies most of the Kawartha Highlands and provides a rugged landscape for the many recreational activities undertaken in the area.

6.6 Shoreline Features

Those participating in water activities can experience scenic views in areas where there are steep ridges as well as areas where the shoreline is gently rolling. The many points, inlets, and shoals along the shore and varying topography offer great opportunities for fishermen, provide canoeists with a scenic paddle along the shore, and offer excellent sites for camping and picnicking. The shoreline is dotted with wetlands and waterfalls that provide excellent viewing and photo opportunities. There are also many islands of various sizes and vegetation types scattered throughout the many lakes of the area.

6.7 Vegetation Features

There are several key areas of interest for the recreational enthusiast in and around the Kawartha Highlands. The many wetlands, mature forests, limestone plain and bedrock outcroppings provide the essential habitat for provincially significant species and communities. These features provide viewing pleasure and learning opportunities for any visitor or researcher using the Kawartha Highlands. Provincially significant areas contain the best examples of "landform and vegetation features of each site district and possess sufficient ecological integrity, buffering capacity and size that protection appears to be a viable management strategy" (Brunton 1990). There is endless potential to use these areas to educate people on their significance and the importance of protection. The significant species, many bog and fen communities and large tracts of mature forests are features of the Kawartha Highlands that provide for many educational and recreational opportunities.

6.8 Topographic Pattern

The Kawartha Highlands shares a similar topographic pattern to that of the surrounding landscape but warrants recognition as a recreational feature as it offers users a unique experience. The vast amount of exposed bedrock, rocky ridges and wetlands gives the feel of being in a remote location in Northern Ontario. The elevation changes dramatically throughout the site, offering a challenge to those seeking an advanced hiking experience, and provides an excellent backdrop for boating and canoeing activity.

7.0 RESOURCE USE

In 2000, the Province commissioned a three-year study entitled, "Study of the Economic and Social Benefits of the Nine Ontario Living Legacy Signature Sites" (Engel Consulting Group et.al., 2004). Sections 7.1 – 7.1.5 present excerpts directly from "Year Three Component: Kawartha Highlands Signature Site Case Study" which included recreational surveys undertaken in 2003 for the Kawartha Highlands. It should be noted that this survey focussed on the May-October recreational users, thus similar statistics on winter activities are not currently available.

7.1 Recreational Activities

The major recreational activities within the Kawartha Highlands from both a use and economic impact perspective are cottaging, canoeing, large-game hunting and angling. Other uses such as recreational boating, hiking, Crown land camping, picnicking, ATV use, etc. are generally secondary activities to the first four activities and occur to lesser extent.

Detailed user statistics on each of these recreational groups are provided in Table 8 and were based on a major primary and secondary research effort conducted in 2003. This included seventy-two full days of sampling at the various access points throughout the Kawartha Highlands.

Please note that these user groups are defined as the "primary activity" in which users engage in. For example, the total number of angling days is an estimate of the number of user days generated by users who are visiting the Kawartha Highlands for the primary purpose of angling. If their primary use is cottaging or recreational canoeing and angling is secondary, the user days are allocated to the former activities.

Table 8: Recreational User Numbers

User Group	User Days
Cottagers (based on 509 cottages defined as in or adjacent to the KHSSP)	183,240
Canoers	18,380
Large Game Hunters	3,171
Anglers	2,433
Others	1,721
Recreational Boaters	253
Hikers	152
Kayakers	82

7.1.1 Cottaging

Peterborough and the Kawarthas are one of Ontario's major cottaging regions. In contrast to the large cottaging lakes in the lower Kawarthas, the Kawartha Highlands are characterized by medium and smaller sized lakes. Significant cottaging communities have developed on Catchacoma, Mississagua, Gold and Beaver lakes, accessible from the west (County Road 507) and on Anstruther, Wolf, Loon, Call, Long and Loucks lakes accessible from the east (Highway 28). Lakes such as Catchacoma, Mississagua and Anstruther while large in comparison to other lakes in the Kawartha Highlands are much smaller than major lakes such as Buckhorn in the lower Kawarthas or the large lakes in Muskoka. It should be noted that the *Kawartha Highlands Signature Site Park Act* does not alter an individual's right to use his or her own property.

Close to 2000 cottages are located in, adjacent to or on lakes that touch the boundaries of the Kawartha Highlands. A total of 509 cottages were defined as being located within or adjacent to the Kawartha Highlands and for the purposes of this study formed the "cottager population associated with the Kawartha Highlands".

Many of the cottaging areas within the Kawartha Highlands were originally water-access only. These water-access cottages supported the development of many small marinas in the area. However, over the last few decades more and more cottages have become road accessible (Plug, 2003). It has also been suggested that the proliferation of roads has led to an increased investment in upgrading and winterizing of cottages. The proliferation of cottage roads has also resulted in the closure of a few of the small marinas and a change in the business of the remaining ones (Plug, 2003; Pilion, 2003).

Cottaging is a major economic driver of the local economy. In the Townships of North Kawartha and Galway-Cavendish and Harvey, which wholly enclose the Kawartha Highlands, there are a total of 6,257 seasonal households. This contrasts to only 3,007 permanent and farm households (Greater Peterborough Area Economic Development Corporation, 2003). The cottaging industry is a major economic stimulus to local retail, all types of construction and repair industries, services to cottagers, marinas and a variety of other economic activities (Basciano, 2003; Sherk, 2003; Griffith, 2003). This type of economic impact is not unique to the Kawartha Highlands, but is typical of most of Ontario's cottaging regions.

One of the marina operators noted that most cottages will have a minimum of one motorized watercraft and many have two or three. This generates considerable business for the local marinas.

Based on survey results from 167 cottager and hunt camp surveys, cottagers took an average of 15.3 trips to the Kawartha Highlands in 2003. Based on an average length of stay of 8.3 days, this results in approximately 120 days per year spent at the cottage. While this number appears to be high, from 2001 to 2003 the total number of trips to private cottage or camp varied only slightly from 13.9 to 15.3 and the average length of stay only varied between 8.3 and 8.4. While we are uncertain, it is possible that the high total number of user days may be partially attributable to some year round cottage living and/or extended spring-summer-fall stays by an early retiree population. As presented in Table 5, it is estimated that there were approximately 183,000 cottaging user days in the Kawartha Highlands in 2003 (average of 4.3 persons/cottage group).

7.1.2 Backcountry Canoeing

The lakes within the Kawartha Highlands have become a major backcountry canoeing area in Central Ontario and at least two canoe guidebooks (Callan, 1993; Viuhko, 1995) have documented the network of canoe routes and campsites that are now wholly within the Kawartha Highlands. The close proximity of the Kawartha Highlands to the large population centres of Southern Ontario makes the region a convenient destination area for canoeists.

Based on visitor surveying and extrapolation of the data, Table 9 depicts the level of canoe day use through various access points. It is estimated that there were approximately 18,380 canoer days in 2003. As noted in this Table, the use is distributed throughout the Kawartha Highlands from over 20 access points.

The most significant access points include Long Lake Lodge, the pre-existing Kawartha Highlands Provincial Park, Wolf Lake Access, Anstruther Marina, Catchacoma Narrows, Anstruther Public Launch, Gold Lake Narrows and the Mississagua Lake Dam Access.

Not surprisingly, these access points are the focal point for the majority of the use within the Kawartha Highlands because they are the most convenient and well-known points for entry into the different canoe route systems within the area. Long Lake Lodge provides convenient access to the Long, Loucks, Cox, Buzzard, Vixen and Sawlog lake systems. The access point to the pre-existing Kawartha Highlands Provincial Park provides access to Bottle and Sucker lakes.

Table 9: Canoer Days by Access Point

Access Point	Canoer Days
Access Point #1 – Military Bridge	18
Access Point #2 – Mississagua River	36
Access Point #3 – Mississagua Lake Dam	734
Access Point #4 – Trapper's Inn	100
[Note: Trapper's Inn no longer exists; property has since been subdivided for private residences.]	
Access Point #5 – West Bay Road	165
Access Point #6 – Little Gull Marina	120
Access Point #7 – Catchacoma Narrows	1016
Access Point #8 – Gold Lake Narrows	741
Access Point #9 – Bottle & Sucker Lakes	2380
Access Point #10 – Baldwin Bay Marina	258
Access Point #11 – Pencil Lake Boat Launch	59
Access Point #12 – Tuckers Road	0
Access Point #13 – Loon Call Lake	79
Access Point #14 – Wolf Lake	2191
Access Point #15 – The Landing Marina	168
[Note: The "Landing" is no longer a marina or access point but the site of a condominium development.]	
Access Point #16 – Anstruther Lake Public Access	933
Access Point #17 – Anstruther Marina	1440
Access Point #18 – Long Lake Lodge (2000-2002 data)	6207
Access Point #19 – MTO/Eels Creek Access	0
Access Point #20 – Coon Lake	340
Access Point #21 – Deer Bay Creek	0
Access Point #22 – Highway 36, Lower Buckhorn, Mississagua River	142
Access Point #23 - Catchacoma Trailer Park and Marina	378
Identified Access Points: Sub-Total	17505
All Other Unidentified Access Points (5% estimate of total)	875
Total	**18380**

Anstruther Marina and the Anstruther Public Launch provide access to the more underutilized lakes such as Rathbun, Copper and Serpentine. Catchacoma and Gold Lake Narrows provide access to Cox but also to the more distant Turtle, Cherry and Stoplog lakes. Finally, Mississagua Lake Dam is the primary access point for canoers on the Mississagua River.

Results from the 2003 survey demonstrated that canoers spent an average of 2.37 days per trip in the Kawartha Highlands. The survey and anecdotal evidence suggest that canoeists within the Kawartha Highlands are almost exclusively destination canoeists, meaning they are paddling in and setting up camp at one site and returning via the same access point. It appears very few canoeists engage in circuit routes. This type of use is indicative of canoeists staying for a shorter trip and also concerned about the competitiveness for sites during peak times.

A background study of the area (van der Meer, 2000) indicated that there were fewer than 100 campsites on these routes within the Kawartha Highlands. However, the number of campsites identified in one of the canoe guidebooks was 151 (Viukho, 1995). Anecdotal evidence from access point managers and users of the area would indicate that during peak times, many canoeists use more marginal campsites, which have not been identified by the MNR as recognized sites. This is particularly the case on the handful of lakes where the bulk of use is occurring – Wolf, Crab, Bottle, Long, Buzzard and Cox lakes.

The background study stated that "it appears that the canoe routes are used close to capacity in the peak summer season and there is room for growth in the spring and fall shoulder seasons." (van der Meer, 2000). The user statistics for 2003 would confirm that the use is heavily concentrated in the two peak summer months, but it should be reiterated that use seems to be most heavily concentrated on the lakes that are closest to access points. In contrast to parks such as Killarney, which require significant portaging, the Kawartha Highlands experience may be providing opportunities for older populations, those who perhaps pack more gear and those who are less interested in the athletic challenges associated with backcountry canoeing.

Demand for Kawartha Highlands Canoeing Experience

For comparison purposes, we decided to compare the 18,380 canoer days in the Kawartha Highlands with canoer statistics from two operating provincial parks – Killarney and Algonquin. In the Kawartha Highlands we have identified 18,380 canoer days within a protected area of approximately 36,000 ha. This also does not include any canoeing associated with cottagers (where this would be defined as a secondary activity). This calculates out to 0.51 canoer days/ha.

Data from the 2002-2003 Ontario Parks Provincial Database reported that Killarney had 36,969 canoer days on 48,500 ha or 0.76 canoers/ha/year. Data from our analysis of park trends completed in Year 1 of the project is that in 2000 Algonquin had 269,510 interior nights. With an area of 772,300 ha, this represents a density of 0.35 interior nights/ha/year (please note a day calculation would moderately increase the density calculation).

While these types of comparisons can be misleading since large portions of these protected areas may not be viable for canoeing (i.e. no lakes or interconnected lakes), it does indicate that the canoeing pressure is already significant and comparable to arguably the two most important parks in the Province providing interior camping opportunities close to the Greater Toronto Area.

There are several reasons to expect that demand for backcountry canoeing opportunities will only increase in the Kawartha Highlands.

- The use of the area has developed without the publicity of an operating provincial park associated with the area - there is every reason to expect demand to increase as the park becomes better known.
- Positive population growth of Southern Ontario.
- There are a limited number of substitute sites in Central Ontario that can offer a similar semi-remote canoe experience to that found in Kawartha Highlands. The list of substitute sites includes most importantly Algonquin Provincial Park, Frontenac Provincial Park, Queen Elizabeth II Wildlands Provincial Park, Frost Centre Lands and the Haliburton Forest Reserve. Both quantitative and anecdotal evidence suggests that these areas are also in demand.

It should be noted that the development of an interior user management system for the Kawartha Highlands will not only ensure protection of the resource and visitor safety issues, but will also have economic implications for users, local businesses and the area economy.

7.1.3 Hunting

Hunting is a historic use within the Kawartha Highlands and will be permitted to continue, subject to regulations under the *Fish and Wildlife Conservation Act*. Hunting in the Kawartha Highlands consists of a major deer and moose hunt, a limited bear hunt that is marketed towards Americans and small game hunting, which is considered incidental to moose and deer hunting. A total of 57 hunt camps have been identified within the Kawartha Highlands. Based on the interviews we determined that there are approximately 409 hunters from hunt camps using the Kawartha Highlands in 2003 and representing approximately 3,020 hunter days. Almost all of the hunting within the Kawartha Highlands is associated with the hunt camps although, based on discussions with local hunters, it is estimated that itinerant hunters account for approximately 5 per cent of the hunting pressure or 151 hunter days. In total this represented 3,171 hunting days.

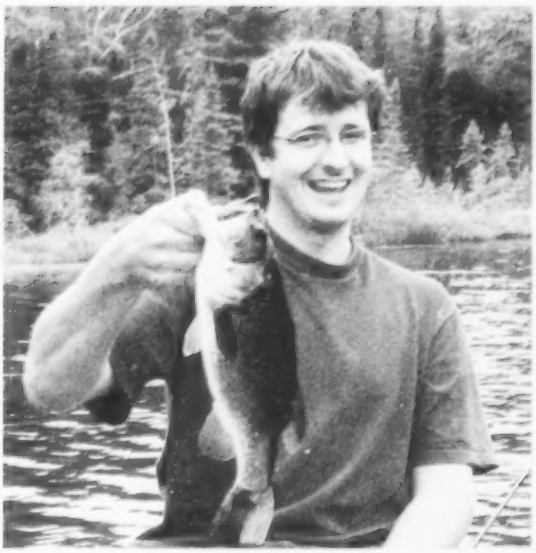
While hunting is the primary focus of the recreation camps, they are also used for other recreational uses such as angling and snowmobiling. The average number of hunters associated with each camp is approximately eight.

Hunting has been identified as a permitted activity with the Kawartha Highlands and will be managed. As the focus of most of the hunting activity is deer and moose season (in contrast to bear and small game) which is after Thanksgiving, there is less potential for conflicts with other uses such as canoeing and cottaging. In fact, these activities have co-existed historically.

7.1.4 Angling

Angling is also a significant activity with the Kawartha Highlands. Based on our field surveying it is estimated that there were approximately 1,947 anglers' days through the 23 identified access points. Based on interviews with local anglers, marina operators and first-hand evidence it was also recognized that anglers were using a number of tertiary or less well known access points. Therefore, it is estimated that 25 per cent of the recorded angler days would be coming through these access points. In total, this accounted for 2,434 angler days.

Interviews indicated that most of the anglers are day-use anglers and that a large percentage of the overall use is driven by local anglers who make multiple trips into the Kawartha Highlands over the course of the year. Some of the marina operators noted that the angling quality is not as good as it use to be and there are fewer anglers coming to the area. As well, many of the lakes within the Kawartha Highlands are small and are difficult to access unless one has the knowledge of and equipment to travel on the many informal trails throughout the area.



A happy angler

7.1.5 Recreational Boating, Hiking, Kayaking and Other Activities

The Kawartha Highlands does provide opportunities for activities such as recreational boating, hiking, kayaking, and other activities (picnicking, Crown land camping), but these uses are small in proportion to cottaging, canoeing, hunting and angling. A 2003 visitor survey indicated the following user-days associated with each of these activities.

- Recreational Boating – 198;
- Kayaking – 82;
- Hiking – 76; and,
- Other – 1,434.

It should be noted that the user days for recreational boating, kayaking and hiking are based on a relatively small number of recorded observations, but they are reflective of over 70 days of field sampling.

The low number of user days associated with these activities is not surprising. The Kawartha Highlands are characterized by relatively small lakes that make kayaking and recreational boating (non-cottager) limited activities. There are no formal hiking trails so the only individuals who will engage in this activity are people who are familiar with the area.

The "other" user category is more complex and requires further explanation. The "other" category was created to capture all other recreational use observed within the Kawartha Highlands. These other uses include some extremely rare activities, such as scuba diving or picnicking/swimming at access points for example. However, the bulk of the 1,434 user days were associated with cottage visitors, Crown land camping at access points and ATV use. The cottager visitor population consists of people visiting friends with cottages and using public access points for parking and access. Crown land camping and ATV use were largely associated with some of the tertiary access points in the Kawartha Highlands. Observed records and extrapolations projected that there were 642 user days associated with the Military Bridge access point and 328 at Tuckers Road. These two access points are rarely used by other users indicating that many of the users within the Kawartha Highlands are self-segregating.

A visitor enjoys the beauty of the Kawartha Highlands from a kayak.

7.1.6 Snow Sports

There are a few winter sports currently taking place inside the Kawartha Highlands including snowmobiling, ice fishing, skiing and snowshoeing. There is potential to increase winter use of the Kawartha Highlands by providing additional opportunities for winter camping.

Currently local snowmobile clubs as well as local residents are using the Kawartha Highlands for snowmobiling. Snowmobile clubs that have Ontario Federation of Snowmobile Club (OFSC) trails within the Kawartha Highlands include the Paudash Trail Blazers and the Buckhorn and District Snowmobile Club. All members must have an OFSC trail permit to use OFSC trails. Snowmobiles are used by many for winter access to seasonal properties as well as accessing the Kawartha Highlands for the winter fishing opportunities.

The Gerry McQuigge Memorial Trail which runs southeast from a snowmobile trail located north of the Kawartha Highlands boundary towards Hwy 28 north of Apsley is operated by the Paudash Trail Blazers (Figure 2). The Buckhorn and District Snowmobile Club operates the remaining trails in the Kawartha Highlands including the Turtle Lake Trail which is 24 km and runs from Buckhorn to Cold Lake, through Harvey Township. The Apsley Trail is 23 km and runs from Cold Lake to Apsley. The Frank Hemming Trail is approximately 21 km and runs north from Buckhorn, then crosses the Mississagua River to Hwy 507. This trail continues across the Hwy as the Picard Trail. The Rathburn Trail is 9 km and runs from Hwy 507, just north of Catchacoma Lake past Pencil Lake to a junction with another trail outside the park boundary (van der Meer 2000). The many trails that are used in the summer months are used by snowmobiles in the winter.

There are currently no maintained cross-country ski trails within the park, although many people participate in this activity by breaking trail or following snowmobile trails. Similarly, snowshoeing is also an activity that is not organized, but many practice this activity within the site.

Dogsledding has occurred within the Kawartha Highlands, but to a limited degree.

Winter camping opportunities could be increased. If cross-county ski trails were to be developed and other trails maintained for winter use then the possibilities of offering winter camping would increase. Looped ski trails and hiking trails could be developed and proper signage/designated campsites posted along the routes to increase the level of winter camping use. Setting up of cabins or yurts along the routes is another possibility that should be investigated. When developing cross-country skiing plans, this effort should be coordinated with the Kawartha Nordic Ski Club (located near Haultain on Hwy 28), to create a complementary, not a conflicting, set of experiences.

Picture perfect

7.1.7 Nature Appreciation

Solitude, relaxation, and contemplation are easily found anywhere in the Kawartha Highlands. Those that own property within the proposed boundary and other visitors to the area have experienced this quality of life. While difficult to definitively measure, the pleasure derived from this recreational activity may potentially be one of the most widespread.

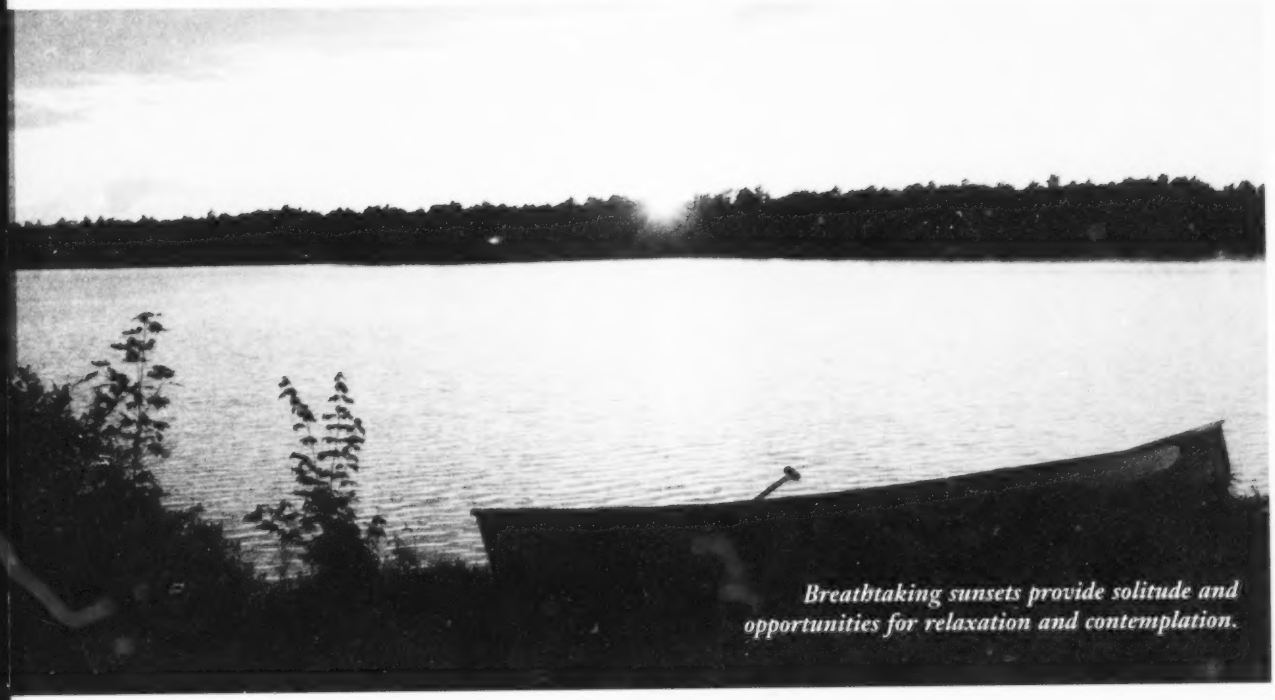
Bird watching opportunities are endless, as the transition zone is home to species that are at their southern home range and species that are at their northern home range. The existence of different habitat types within the Kawartha Highlands means that the habitat requirements for numerous species of birds are met. There are opportunities to provide guided bird watching tours for those individuals looking to expand their knowledge of the bird species in this area.

Educational programs could be developed to teach visitors about the natural and cultural resources of the Kawartha Highlands. The dark night skies are excellent for stargazing and offer another opportunity for learning.

There are many informal opportunities for participating in photography, drawing, painting, and nature study in the Kawartha Highlands. All seasons provide magnificent views for visitors to experience.

7.1.8 Other

Other activities not previously mentioned, but known to occur within the Kawartha Highlands based on previous public consultations, include sailing, horseback riding, llama trekking, waterskiing, personal water craft use, rock climbing, mountain biking and orienteering. It is believed that these activities occur to a lesser extent within the entire Kawartha Highlands than the activities previously mentioned.



Breathtaking sunsets provide solitude and opportunities for relaxation and contemplation.

7.2 Commercial Activities

7.2.1 Trapping

Registered traplines were introduced in Ontario in 1950 as a means of better controlling trapper activities and harvest effort. Under the *Fish and Wildlife Conservation Act*, the MNR has the authority to establish license types and to impose written conditions upon the license. Among these conditions may be limits to the species and maximum/minimum numbers for each species to be harvested. Trappers must renew their licenses on an annual basis otherwise the license may be revoked. Trappers must also submit a Mandatory Season-end Harvest Report, documenting the year's harvest. Vacant traplines are assigned to new trappers based on qualifications and experience of the interested trappers.

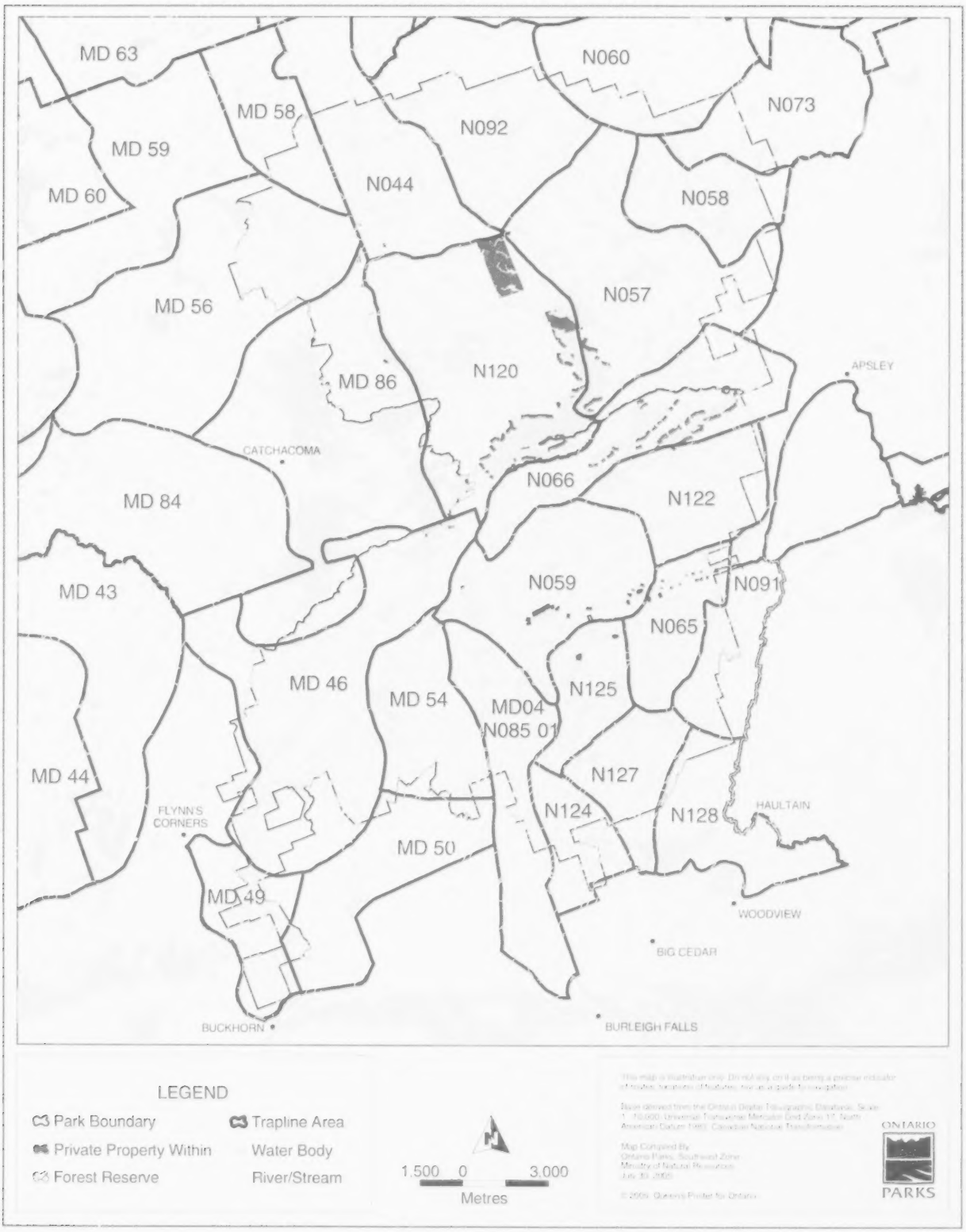
Within the Kawartha Highlands, portions of 24 registered trapline areas exist (Figure 8).

7.2.2 Baitfish Licenses

The baitfish resource in much of the province is allocated to harvesters through the exclusive use block system (one harvester per bait harvest area) with block sizes generally much larger in the north than in the south. There are exceptions to the block system, mostly in southern Ontario where the resource is allocated to multiple users harvesting the same area. The authority for the Baitfish Licence is under the *Fish and Wildlife Conservation Act*. All bait harvesters must report annually on their bait harvest for that year. A vacant bait harvest area may be reallocated by the MNR based on an assessment of the applicants interested in the area.

There are portions of 14 bait harvest areas within the Kawartha Highlands (Figure 9).

Figure 8: Registered Trapline Areas, Kawartha Highlands Signature Site Park



7.2.3 Bear Management Areas

Bear Management Areas (BMA) were established to provide outfitters with tenure over a particular land base for authorization to provide bear guiding or baiting services to non-resident bear hunters, and are established under the *Fish and Wildlife Conservation Act*. Licences must be renewed on an annual basis with fees paid prior to performing any bear hunting services to clients. Mandatory reporting is a requirement of the licensee. The MNR may revoke a licence if compliance to the above requirements is not met. The MNR may reallocate the BMA based on an assessment of the applicants.

Portions of six Bear Management Areas are associated with the Kawartha Highlands (Figure 10).

7.2.4 Commercial Outpost Camps

Under the *Public Lands Act*, MNR has made outpost camp sites available for a variety of consumptive and/or non-consumptive purposes in accordance with principles of sustainable use, land use plans and normal disposition processes. The goal has been to provide access to sustainable opportunities for commercial tourism development. The Land Use Permit issued generally authorizes 0.5 ha of land associated with this use and can include a water lot for docking purposes. Buildings must comply with standards of the tourism industry, health unit and the Ontario Building Code.

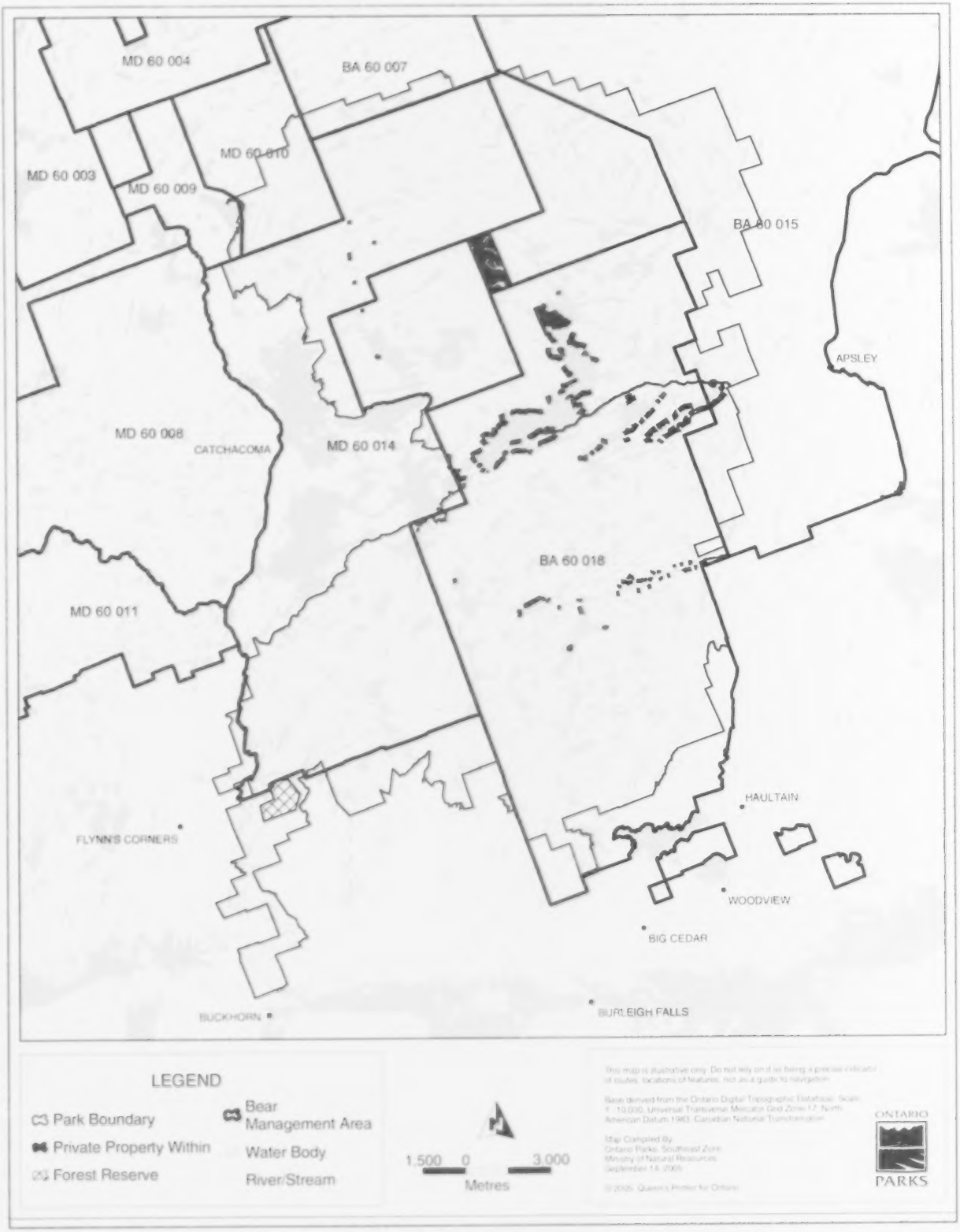
There are three commercial outfitters operating a total of four outpost camps in the Kawartha Highlands (Figure 3).

7.2.5 Guiding

The MNR does not require any licencing of persons who provide guiding services for resident hunters, or for guiding fishing trips, canoe trips, ecotourism or other endeavours. Previous public input on the Kawartha Highlands has brought to light that some of these activities do occur here, including guiding services for resident bear hunters, canoe trips, and llama trekking. Other guiding services may be occurring in this area as well.

Figure 9: Commercial Bait Harvest Areas, Kawartha Highlands Signature Site Park

Figure 10: Bear Management Areas, Kawartha Highlands Signature Site Park



8.0 SOCIAL AND ECONOMIC CONTEXT / MARKET ANALYSIS

In 2000, the Province commissioned a three-year study entitled, "Study of the Economic and Social Benefits of the Nine Ontario Living Legacy Signature Sites" (Engel Consulting Group et.al., 2004). This section provides excerpts directly from "Year Three Component: Kawartha Highlands Signature Site Case Study" of the economic and demographic trend analysis, the recreational survey and the estimation of recreational value associated with the Kawartha Highlands. As part of the study of social and economic benefits of the Living Legacy signature sites, the Great Lakes Heritage Coast was divided into three Regions to facilitate demographic analysis.

The two southerly signature site regions, Kawartha Highlands and Great Lakes Heritage Coast Georgian Bay Region, differ significantly in economic and demographic trends from the other nine more northern regions. These are: Woodland Caribou, St. Raphael, Nipigon Basin, Nagagamisis, Spanish River Valley, Algoma Headwaters, Killarney, Great Lakes Heritage Coast Lake Superior Region and Great Lakes Heritage Coast North Shore & Manitoulin Island and are characterized by stagnant population growth or a small population loss. In contrast, the Kawartha Highlands and Georgian Bay Region of the Great Lakes Heritage Coast are characterized by population growth rates which typify the Provincial population growth rates.

The northerly signature site regions are characterized by a narrow economic base that is dependent on resource-based industries and the government services sector. The resource industries include the forest products, mining and tourism industries. The tourism industry, in and around the signature sites, is strongly associated with the natural resource base and includes remote fishing and hunting and highway-based tourism. Most other economic sectors in Northern Ontario, such as wholesale and retail trade, transportation, construction and business services industries, are largely dependent on the resource industries and the energy and agricultural industries. Public sector employment and spending across all three tiers of government was found to often provide equal or higher levels of employment and income than the forest products or mining industries in many communities.

In contrast to the nine northerly signature site regions, the Kawartha Highlands and the Great Lakes Heritage Coast Georgian Bay regions have very little economic dependency on resource extractive industries. Both regions rely heavily on the tourism industry and government services and the Kawartha Highlands region also has a manufacturing base. In many respects, the differing economic characteristics between the nine northerly signature site regions and the two southerly regions are a function of geography. The nine northerly signature site regions and, in general, all of Ontario north of the French River, remains highly dependent on natural resources. South of the French River, areas such as the Kawartha Highlands and Great Lakes Heritage Coast Georgian Bay Region are linked to, and dependent on, the Southern Ontario economy – whether it is for tourism, recreation and/or proximity to other manufacturing areas and consumer markets.

8.1 Population and Demography

One of the aspects of this project has been to compare the different Signature Site regions across the Province in terms of broad economic and social trends. Out of the nine signature sites, the Kawartha Highlands Signature Site region is the only one that has experienced significant population growth. This region's population grew from roughly 70,000 people in 1981 to almost 85,000 people in 1996. In contrast, the other Signature Sites are located in Central or Northern Ontario which have generally been experiencing consistent population declines over the last two decades.

The population of the Peterborough County and City continued to show positive growth during the 1996 to 2001 period with the population growing 2.0 per cent from 123,448 to 125,856. The Township of North Kawartha mirrored the region's population growth increasing from 2,104 to 2,144 a 1.9 per cent change. In contrast, the Township of Galway-Cavendish-Harvey experienced a –0.6 decline going from 4,400 to 4,372 (Greater Peterborough Economic Development Corporation, 2003).

Both of the two local townships are large (North Kawartha – 765 square km and Galway-Cavendish-Harvey – 848 square km) and relatively sparsely populated. The Township of North Kawartha in 2001 had a population density per square kilometre of 2.8 while Galway-Cavendish-Harvey had one of 5.2 (Statistics Canada, 2003).

The total aboriginal population in the region, while less than areas of Northern Ontario, is still significant. In 1996 the Census identified a total aboriginal population of 1,965 individuals. The Curve Lake First Nation Reserve is a large community with a total registered population of 1,679, with 717 living on the Reserve (Indian and Northern Affairs Canada, 2002).

In terms of mobility status, this region's characteristics are more similar to the province than to the other signature site regions. In Ontario during the 1991 to 1996 period 56 per cent of the population identified themselves as non-movers and 42 per cent as movers. In this region it was approximately 57 per cent non-movers to 43 per cent movers. In the 1986-1991 period movers represented slightly over half of the population.

The proportion of migrants in relation to total movers in this region is larger than in the other signature site regions. Of the 32,945 movers in the 1991–1996 period, 14,280 were migrants to the region. In the period of 1986-1991 the number of migrants outnumbered the number of non-migrants.

The two key demographic trends in this region: positive population growth and significant migration from outside of the region are more characteristic of provincial trends than trends associated with the other more northern signature sites. It is likely that a variety of social and economic factors contribute to these trends. These include: a diversified economy that continually provides economic opportunities; migration of mature people to the region who are converting cottages to homes and purchasing retirement properties; and, a desire on the part of young people not to leave the region.

The populations of the two local townships are older in comparison to the Ontario average. The median age of the population in North Kawartha is 47.6 and in Galway-Cavendish-Harvey it is 50.5, in contrast to 37.2 in Ontario as a whole (Statistics Canada, 2003). A variety of labour force indicators continue to show the "elderliness" of the population. The participation rate in the economy is 51.7 per cent and 52.4 per cent in the two Townships in contrast to 67.3 per cent in Ontario. This is despite the fact that the unemployment rate in the two townships were 5.9 per cent and 6.8 per cent both roughly comparable to the 6.1 per cent in Ontario. Furthermore, earnings as a total percentage of income were only 59.5 per cent and 58.7 per cent in contrast to the provincial average of 78.7 per cent. Meanwhile government transfer money represented 21.1 per cent and 18 per cent in contrast to 9.8 per cent and other income was 19.5 per cent and 23.3 per cent in contrast to 11.5 per cent. The income composition figures indicate that this is an older population than the provincial average with an increased reliance on government and private pensions and personal investments (Statistics Canada, 2003). All the demographic trends demonstrate the "maturity" of the local population, whether it is "aging boomers" early retiring to cottages or the population merely aging in place. Most likely, both of these are occurring.

8.2 Regional Economy

The total labour force in this region has increased from 34,640 in 1986 to 38,695 in 1991 and then dropped back to 36,805 in 1996. The drop in the labour force in 1996 is likely to have been associated with the more difficult economic times in the mid 1990s when unemployment in this region peaked at 11.6 per cent.

The 1996 Employed Labour Force Summary by Industry Classifications (Engel Consulting Group, 2002) in Table 10 summarizes the employed labour force in 1996 by major sectors.

What distinguishes the Kawartha Highlands Signature Site region from the other signature site regions is the relatively lower importance of the resource-based industries. Only 350 people were employed in resource-based industries in this region in 1996 and 240 of these were associated with agriculture. The next largest sub-sector in the resource-based industries was 20 in the sawmill sector. Only 20 logging industry jobs were identified, indicating that the logging industry may be only a part-time occupation for some individuals.

Resource-based industries (e.g., mining, forest products) other than agriculture are of minimal significance to the regional economy. The 2001 labour force statistics continued to show that agriculture and other primary resource industries were fairly insignificant in the local economy. Only 50 of the 910 individuals in the experienced labour force were in agriculture and other resource industries in North Kawartha and 100 out of 1,950 in Galway-Cavendish & Harvey (Statistics Canada, 2003). Given the insignificance of the resource industries as an employer in 1996, it is likely that the establishment of the Kawartha Highlands Signature Site had negligible impact on either the resource based industries or the regional economy.

Table 10: Regional Employed Labour Force Summary

Employed Labour Force Sector	Employed Labour Force
Government Service Industries	6,165
Manufacturing Industries	4,955
Other Health, Social & Education Service Industries	3,885
Tourism, Accommodation & Hospitality Industries	3,565
Retail Trade Industries	3,465
Business & Other Professional Service Industries	2,875
Construction & Repair Industries	2,145
Transportation, Storage, Communication & Other Utility Industries	1,975
Wholesale Trade Industries	1,560
Personal & Household Service Industries	1,015
Resource-Based Industries	350
Total	**31,955**

Tourism is the most dominant industry that is reliant upon the region's natural resource base (except for the agricultural lands in the south of Peterborough County). Cottaging, camping, resort use, recreational boating and angling are likely all significant economic activities in the region and in particular in the small communities and all these recreational activities are dependent on the natural resource base of this region.

8.3 Tourism in Peterborough and the Kawarthas

Given the significance of tourism in the local and regional economies and the economic importance of capitalizing on the tourism opportunities provided by the Kawartha Highlands, we have paid special attention to the characteristics and challenges associated with the existing tourism industry.

Research commissioned by the Greater Peterborough Economic Development Corporation has demonstrated that tourism is a major industry in Peterborough County attracting 1,951,000 person visits in 2001, with just over half the visits being same-day trips. Not surprisingly, almost all the same day visits were by Ontario residents and about 90 per cent of overnight tourists (754,000) also being Ontario residents (Research Resolutions Inc., 2003). It is estimated that these visitors spent approximately $165 million with approximately $39 million by same day tourists and the balance by overnight visitors. It was estimated that this expenditure pattern resulted in 2,390 direct jobs in the region and 1,130 indirect and induced (Research Resolutions Inc., 2003). Not surprisingly, 40 per cent of the overnight trips are from residents of the Toronto Census Metropolitan Area.

Two interesting issues raised in the Research Resolutions study and which are relevant to the future use of the Kawartha Highlands are: (i) the increasing market share of older tourists; and (ii) a growing proportion of Ontario's population will be increasingly urbanized and foreign born/ethnically diverse. While the Research Resolutions study indicated that special education programs may be required to generate interest in the outdoor experiences, which are the cornerstone of the region's tourism product, the Kawartha Highlands with its small lakes, comparatively fewer and shorter portages and closer proximity to the Greater Toronto Area, may be better positioned to capitalize on these market trends than parks such as Algonquin. The Research Resolutions study also noted that in special tabulation from the TAMS survey (Tourism Attitudinal Motivational Study), residents of Toronto born outside Canada have about half the participation rate in outdoor activities as do Canadian born Toronto residents. While that may not be surprising, the outdoor experience offered by Ontario Parks and places like Kawartha Highlands will need to consider the background of these new Canadians.

Tourism is in many respects the only potential growth industry for these two local townships [Galway, Cavendish & Harvey and North Kawartha] (Basciano, 2003; Sherk, 2003). The resource industries in the area have already been experiencing decline for many years and provide only supplemental income to many households. The area is also likely to be of minimal interest for manufacturing or office related uses as these types of businesses will be more likely to locate in and near urban and suburban centres such as Peterborough. However, it should also be noted that residents of these communities are likely to continue to travel to Peterborough for employment.

As the Research Resolutions Study pointed out the tourism product of Peterborough and the Kawarthas is strongly oriented to the outdoor market, this is even more the case of the two Kawartha Highlands townships and in fact these townships can provide the more "wilderness" experience associated with the area. Staff at the Greater Peterborough Economic Development Corporation noted that they are hoping to capitalize on the experiential tourist market of individuals in the 45-55 year old age bracket who want to re-connect with nature (Basciano, 2003; Sherk, 2003).

While tourism may seem like a narrow industry it drives a wide variety of other sectors in the local economy including retail, restaurants, personal and household services, construction and trades, recreational services, marinas and more general administrative businesses. While the tourist season is still heavily concentrated in the summer and to a lesser extent the shoulder seasons, the north Kawarthas are located in close enough proximity to attract more winter use. More winter use whether it be in cottages or in resorts would also help to address seasonality employment issues in the region.

There are some obvious business opportunities resulting from the park in enterprises such as canoe and equipment rentals, water-taxi services, parking and basic retail sales. There could be more value-added opportunities in guiding and full scale outfitting for older and new canoer markets. In turn, providing more value-added opportunities may stimulate the need for more accommodation services. As well it has been suggested that craft related industries (canoe building) thematically related to the area could be developed (Basciano, 2003; Sherk, 2003).

8.4 Profile of Marinas and Lodges Immediately Adjacent to the KHSSP

Interviews were held with the area businesses that are most directly impacted by the designation of the Kawartha Highlands. This included interviews with Long Lake Lodge, Baldwin Bay Marina, Catchacoma Trailer Park and Marina, Anstruther Marina and Little Gull Marina. An interview was also held with a representative of The Landing Marina, but it should be noted that the marina is being closed to allow sufficient area for a condominium development. All these business owners have a major economic stake in the region and can be positively or negatively impacted by decisions associated with the establishment of the Park. It should be noted that the focus of these businesses has shifted over the years and they have become increasingly specialized. The marinas were initially constructed and managed to service the cottagers in the area, which were largely all water-access cottages. Over the last 20 to 30 years, as more lots have been purchased, cottagers have jointly developed roads giving them vehicle access and lessening the need for the marinas. A number of the marina operators noted that the total number of cottagers on the lakes was too small to support all the marinas, so the total number has been reduced and many of them have branched off into more specialty services (e.g., Baldwin Bay Marina actively sells boats throughout Ontario).

Baldwin Bay Marina is located on the north end of Catchacoma Lake. Its principal business activities include: boat and motor sales; boat and motor repairs and storage; dock construction, retail sales and boat/canoe rentals. The business employs four full time people and three full-time seasonal (Plug, 2003).

Little Gull Marina's primary business is serving cottagers with boating needs. The Marina provides for storage of up to 600 boats and actively repairs boats and motors and has slip space for 51 water-based cottages. Food and supply sales and rentals are a small portion of the overall business. Little Gull was built in the 1960s. Little Gull employs approximately six people year round, four students in the summer and occasional staff for spring boat cleaning. The major expenditure is labour with other large expenses being taxes and insurance (Carroll, 2003).

Catchacoma Trailer Park and Marina is located on the Beaver Lake Road less than a kilometre from Highway 507. The main focus of this business is a seasonal trailer park, a large restaurant and grocery store and partial marina service (dockage and gas). The Trailer Park was built in 1973. Catchacoma Trailer Park employs two people full-time year round and up to 15 in the summer and half dozen during a good snowmobile season. Similar to the other businesses, the largest cost is labour (Krije, 2003).

With the closure in 2003 of the Landing Marina, the Anstruther Marina is now the only marina on Anstruther Lake. This marina provides seasonal docking and storage, canoe and boat rental, docking and storage, sales and service on Polaris ATVs and snowmobiles, marine maintenance and service, barge service,

gas sales and a snack bar. Four individuals are employed full-time along with summer help (Friedrich, 2003).

Long Lake Lodge is located at the eastern end of Long Lake and is probably the optimal launching point for canoe trips into the southern lakes of the Kawartha Highlands. Long Lake Lodge operates a seasonal trailer site, cottage rentals, parking, significant canoe rentals, boat docking, launching and storage; and some basic retail sales. The operation employs two full-time individuals, some contracting operations and occasional summer workers. Long Lake Lodge has excellent parking and launch facilities for canoeists. Ninety-five per cent of their use is from cottagers and very little from anglers.

One of the benefits the marinas and Long Lake Lodge offer to canoeists is secure parking for their vehicles. The marinas and lodges will be in many respects "on the front lines" in servicing visitors to the Kawartha Highlands. It is recommended that MNR identify ways in which these businesses can serve as welcome areas for visitors. This may include considering how these businesses could provide orientation, education and interpretive functions.

Regardless of the economic benefit of the park to these local businesses, all the business owners were primarily concerned that the Park leads to improved management of the resources and improved safety conditions. Many of them are concerned by the present volume of visitors to the area and their existing impact on the resource and major safety issues such as road safety. Most of the business owners indicated a desire to see designated campsites, improved parking areas, enforcement and overall management of the interior (e.g., quotas, garbage).

One of the local business owners commented that designating the area as a park was an important benefit in him acquiring the marina and all the local businesses indicated an interest in seeing what new business opportunities could result from the park, particularly in the area of canoe rentals, water taxi use, guiding, parking, sundry sales, etc. These local business owners are also aware that future decisions on the visitor management system and access points will be significant factors in how they can benefit from it.

8.5 Recreational Use Survey and Economic Benefit

The Kawartha Highlands was already a major natural recreational playground for tens of thousands of individuals prior to the area being designated a provincial park. Results from the 2003 visitor survey indicated that the one-way travel distance to the Kawartha Highlands for respondents was approximately 186 km. The Kawartha Highlands lies just over a two-hour drive from most parts of the Greater Toronto Area and the resource base will continue to feel the pressure of the fastest growing region in Ontario together with an increasingly limited supply of semi-wilderness opportunities within reasonable proximity of Southern Ontario.

The user statistics generated through this project indicate that by far the greatest economic benefits and likewise the greatest pressure on the resource will come from cottagers. The estimated number of cottager days (defined as those in or adjacent to the site – slightly over 500) is approximately 183,000 user days or ten times the canoer user day number of approximately 18,000. In turn the next largest user groups are hunters and fishermen at approximately 3,000 and 2,500. The local communities have already become "cottager economies", as investment in these properties continues this will only continue. The populations of the local communities have already adapted their skills to serving a tourist market and can build on this capacity to further increase the benefits as more economic opportunities are presented.

As described throughout the case study, the number of canoers in the Kawartha Highlands already rivals similar densities in established wilderness and natural environment parks such as Algonquin and Killarney. At the same time, results from the visitor survey indicated that there is an extremely high tolerance for encountering other users within the Kawartha Highlands. While many canoeists may not see this congestion as an ideal wilderness environment, it does demonstrate that the Kawartha Highlands provides enough of a wilderness experience to meet other canoeists needs.

In this respect, Ontario Parks and MNR may want to plan and manage the Kawartha Highlands with different objectives than how parks such as Quetico, Killarney or other wilderness parks have been planned. The Kawartha Highlands could meet the demand of increasing numbers of Southern Ontario residents who may be seeking a more modest or "introductory" wilderness experience – fewer portages, reserved campsites, shorter paddles, smaller lakes. New, urbanized and older Ontarians, as well as young families, often lack the experience and physical skills to undertake arduous wilderness trips but may be inclined to seek a quasi-wilderness experience more fitting their skills. This population is also likely to require more rental, guiding and/or purchase other local goods and services – creating more economic opportunities for local businesses. The establishment of the Kawartha Highlands Signature Site Park provides a legal, planning and management opportunity to create objectives and strategies that could lead to enhancing the positive economic and social benefits of the area while ensuring the protection of the resource.

Sucker Lake

9.0 MANAGEMENT CONSIDERATIONS

The *KHSSP Act* and Charter have determined certain direction for the park, and the management planning process will build on existing direction contained within these documents. For ease of understanding, the direction we currently have for the park will be described by topic and some of the areas which need to be clarified during management planning will be identified separately. It should be noted that management planning topics are not restricted to those noted below. The following charts summarize the direction from the legislation and Charter. For full text and further detail, please refer to the Charter document (OMNR, 2003), which contains the legislation.

9.1 Natural And Cultural Resource Protection

Resource Management

The management plan will need to be developed to ensure that the purposes for the Kawartha Highlands Signature Site Park as set out in the *KHSSP Act* (see table below) are considered and incorporated into management direction prescribed for the park. A component of this will be to provide ongoing monitoring programs to test the success of the management direction and to identify areas where the ecological integrity of the park is being compromised so that corrective action can be taken.

Kawartha Highlands Signature Site Park Act and Charter direction:	**Management Planning to address:**
The purposes of the Act are to ensure: a) that the protection of the ecological integrity of the Kawartha Highlands Signature Site Park is recognized as the overriding priority in the management and administration of the park, so as to preserve, protect and enhance the natural composition and abundance of native species, biological communities and ecological processes in the park; b) that the policies governing the park, including its management, will protect the park's natural and cultural values, maintain its traditional uses and provide the opportunity for recreational activities that are compatible with the natural heritage values and semi-wilderness character of the park; c) that the park will be managed so as to permit continued access to and enjoyment of private property and of Crown land that is subject to a land use permit, licence of occupation or lease under the Public Lands Act where that private property or Crown land is surrounded by park lands or abuts park lands; and d) that decisions with respect to the development and any major revisions of the management plan for the park are made with prior public consultation. (*KHSSP Act*, Section 2) The park's natural resources shall be managed so as to protect the park's ecological integrity and reflected in the management plan and any document approved by the Minister relating to the management of natural resources in the park, including a recovery plan for species at risk (*KHSSP Act*, Section 8).	• Zoning of park for appropriate activities. • The direction provided in the purpose and resource management sections of the *KHSSP Act* (Section 2 and 8). • An outline of a long term monitoring program to assess the success of protecting the ecological integrity of the park.

Future Land Acquisitions or Additions

From time to time, private land holdings within and adjacent to the KHSSP may be made available for sale. To date, several properties available for purchase have been identified to the park office and it is important that criteria are developed to evaluate these properties and the contribution of their addition to the park's biodiversity and/or ecological integrity. As well, certain Crown land adjacent to the boundary may be of value to include in the park, for example the old growth pine forest stands in Anstruther Township which were previously identified as forest reserves (mining tenure).

Kawartha Highlands Signature Site Park Act **and Charter direction:**	**Management Planning to address:**
No land will be expropriated for the purpose of increasing the area of the park (*KHSSP Act*, Section 4).	• Identification and prioritization of available land holdings (both private and Crown) that would contribute to the ecological integrity and/or biodiversity of the park.

9.2 Resource Use

Enhanced Tenure for Recreation Camps and Outpost Camps

There are 57 recreation camps currently within the park and three commercial outfitters. The policies established in Ontario's Living Legacy Land Use Strategy apply to this park, and the management plan will determine enhanced tenure opportunities for existing camps.

Kawartha Highlands Signature Site Park Act **and Charter direction:**	**Management Planning to address:**
Existing authorized seasonal recreation camps are eligible for enhanced tenure but not purchase of land. Existing tourism facilities may be eligible for enhanced tenure, and decisions will be made in management planning (Charter, page 7).	• Enhanced tenure. • Procedures to deal with lapsed permits. • Procedures regarding camp size, additions, etc.

Trapping

To provide greater certainty to traditional users of the area, the *KHSSP Act* confirmed that trapping would continue in the park. This was the existing policy for establishing new protected areas, however, inclusion in the legislation provided a higher degree of certainty for those involved in this activity.

***Kawartha Highlands Signature Site Park Act* and Charter direction:**	**Management Planning to address:**
Trapping will continue in the park (*KHSSP Act*, Section 11 (1)). Trapping licences may continue to be issued for trapline areas that fall partly or wholly within the Park (Charter, page 12)	• Protocols for the appropriate use of trapping cabins. • Decommissioning of abandoned cabins.

Fuelwood Permits

Fuelwood cutting is generally not permitted in provincial parks, but an exception was made in new OLL parks, like the KHSSP, where an authorized fuelwood cutting permit has been continuously maintained prior to the approval of the OLL LUS (July 1999) and where the property does not have road access. Such permits may be renewed on an interim basis but, where possible, alternative fuelwood areas outside of the park should be sought. The future status of permits will be determined on a case-by-case basis as part of a management planning process. The Charter has gone slightly further with this exception.

***Kawartha Highlands Signature Site Park Act* and Charter direction:**	**Management Planning to address:**
Existing fuelwood permits may be renewed. Water access properties are eligible to apply for new fuelwood permits (Charter, page 7).	• Process for reviewing and approving new fuelwood permits.

9.3 Recreational Use

Backcountry Camping

There are currently over 100 camp sites in the interior of the Kawartha Highlands that are presently used by visitors. The future of these sites will be decided through management planning. Decisions about maintaining, relocating, closing or adding to current sites will be made based on ecological considerations, carrying capacity, recreational demand and maintenance costs. Park staff are in the process of evaluating all sites and, in the interim, closing sites that pose ecological or health and safety concerns. Backcountry campsites will require upgrading to Provincial Park standards, including the construction of tent pads, fire rings, relocation of some privies, signage and permit holders. If backpacking trails are constructed in the park, new interior campsites on lakes not on canoe routes should be considered, in order to both reduce conflict between user groups, as well as to reduce the intensity of use on any given lake.

***Kawartha Highlands Signature Site Park Act* and Charter direction:**	**Management Planning to address:**
Low density backcountry sites (Charter, page 10).	• Upgrade and maintenance of sites to minimum backcountry park standards. • Closure, relocation or addition of sites. • Reservation system for campers. • Possible can and bottle ban for interior park use.

Hunting

To provide greater certainty to traditional users of the area, the *KHSSP Act* confirmed that hunting would continue in the park. This was the existing policy for establishing new protected areas, however, inclusion in the legislation provided a higher degree of certainty for those involved in this activity.

***Kawartha Highlands Signature Site Park Act* and Charter direction:**	**Management Planning to address:**
Hunting will continue in the park (*KHSSP Act*, Section 11 (1)).	• Areas where no hunting will be allowed for safety considerations. • Possible time of year restrictions on hunting activities. • Sighting of firearms and target practice in park.

Fishing

To provide greater certainty to traditional users of the area, the *KHSSP Act* confirmed that fishing would continue in the park. This was the existing policy for establishing new protected areas, however, inclusion in the legislation provided a higher degree of certainty for those involved in this activity.

***Kawartha Highlands Signature Site Park Act* and Charter direction:**	**Management Planning to address:**
Sport fishing will continue in the park (*KHSSP Act*, Section 11 (1)).	• Use of live baitfish.

Recreational Trail System

The previous public consultation on the Kawartha Highlands identified many different activities which are currently happening within the park. Not all of the activities currently existing in the area are compatible with each other. There is a need to confirm the activities which are considered acceptable and to look at multi-use trails that could be used by compatible recreational activities.

***Kawartha Highlands Signature Site Park Act* and Charter direction:**	**Management Planning to address:**
The management plan will provide for the traditional uses that occur within the area and will also respond to the Local Stakeholder Committee recommendations that were not specifically dealt with in the Charter (Charter, page 10).	• Confirmation that the following recreational activities currently undertaken in the KHSSP are appropriate activities in the area: cross country skiing, dog sledding, hiking, horseback riding, llama trekking, mountain biking and snowshoeing. • Development of a multi-user trail system to accommodate permitted activities.

9.4 Access and Infrastructure

Visitor Management/Customer Service

The need for new facilities in the Park must be assessed and decisions made on type, location and operation. Facilities that may be considered include: a Park administrative office, maintenance compound, visitor centre, public washroom facilities, day use facilities, hiking trails, interior facilities (campsites), etc. Parking areas will also need to be addressed as significant concern has been raised regarding both conflicts between park visitors and landowners or tenure holders, who use public launching and parking facilities to access their properties, as well as health and safety concerns caused by insufficient parking leading to inappropriate parking by visitors.

***Kawartha Highlands Signature Site Park Act* and Charter direction:**	**Management Planning to address:**
No new facility that is intended to be used by the public shall be constructed within 100 metres of private property (*KHSSP Act*, Section 9).	• Need for and location of a park infrastructure, such as: administrative office, maintenance compound, possible visitor centre, parking areas, access points, public washrooms and day use facilities. • Permitting system and fee structure for all activities in the park.

Access – Roads and Trails

Several authorized access roads have been built to cottage or lake front property over Crown land in this area in the past. There are numerous trails throughout the park, none of which have been formally recognized through a public planning process. A road and trail inventory will be completed within one year of proclamation of the *KHSSP Act*. The Management Advisory Board will review and provide advice to the Minister on the appropriate trails and roads to become part of an approved system. Park staff have been undertaking the digital mapping of these routes so that they can be reviewed to determine which of these roads and trails should be authorized for continued motor vehicle use. Access to private property and tenure land has been ensured through the *KHSSP Act* and must be accommodated in the approved road and trail system (i.e. current cottage access roads will be authorized). The review will consider the ecological impacts of established roads and trails, and safety considerations. The potential for two new public access roads has been provided for in the legislation and the provisions of the Provincial Parks and Conservation Reserves Class Environmental Assessment will be followed. This assessment will consider route options to minimize the degree of intrusion in the park as well as impacts on ecological integrity and strive to maximize appropriate access for park visitors. Project alternatives shall include construction of both roads, one road or no roads.

***Kawartha Highlands Signature Site Park Act* and Charter direction:**

No new access roads are allowed (*KHSSP Act*, Section 10 (1)).

Exception: Two new roads to provide public access to the park may be constructed (one on west side, one on east side) if exact location is approved by the Minister and construction begins within 30 months of proclamation of the Act (*KHSSP Act*, Section 10 (2)). In approving these road locations, the Minister must take into consideration public concerns and ensure the degree of intrusion on the park and impacts on ecological integrity are minimized (*KHSSP Act*, Section 10 (3)).

Exception: A new road (or trail) may be constructed in the park if it is solely for park management purposes (*KHSSP Act*, Section 10 (4) & (8)).

No new trails for all-terrain vehicles or motorized snow vehicles shall be constructed in the park (*KHSSP Act*, Section 10 (6)).

"pre-existing road or trail" means (*KHSSP Act*, Section 1),

(a) during the 12-month period that begins on the day section 13 comes into force, any road or trail that was constructed and in use on and before March 29, 1999, and

(b) after the end of the 12-month period described in clause (a), a road or trail referred to in clause (a) that has been approved by the Minister as a pre-existing road or trail for the purposes of this Act and is shown as such on a map that is included in the management plan or available at the Ministry.

Management Planning to address:

- Preferred option(s) for the two potential public access roads. A Class Environmental Assessment will be completed concurrent to management planning with results being incorporated into the management planning documents.
- An approved road and trail system for the park.

Access Rights for Property Owners, Tenure Holders, Staff and Guests

As a result of the Charter discussions, a number of assurances have been provided in the *KHSSP Act* to property owners and tenure holders regarding their rights to access the properties. These have been listed here and management planning will need to address how to best implement this right of access.

***Kawartha Highlands Signature Site Park Act* and Charter direction:**	**Management Planning to address:**
May, without charge, enter the park and operate a motorized vehicle or motorized snow vehicle in the park for the purposes of access to property (private or tenured) if the normal means of gaining access was through the park, and for hunting purposes (*KHSSP Act*, Section 13 (2)). Operation of motorized vehicles only on the approved road and trail system (*KHSSP Act*, Section 13 (3)). Must obtain a vehicle permit (no charge) for use of motorized vehicles in park (*KHSSP Act*, Section 13 (7)). Need to have a valid trail permit for use of any OFSC snowmobile trails (*KHSSP Act*, Section 13 (4)). May go ice-fishing without charge (*KHSSP Act*, Section 13 (5)) with appropriate fishing licence documentation. May land an aircraft without charge to access the property but still requires a permit authorizing the landing for a particular area (*KHSSP Act*, Section 13 (6)). The superintendent may limit the number of vehicle permits to be issued without charge at one time to guests of property owners or tenure holders (*KHSSP Act*, Section 13 (8)).	• Permit system (free) for property owners, tenure holders, staff and guests.

Motor Vehicle Use

Usually a topic of management planning, many specific aspects of motor vehicle use were established in legislation. Ongoing monitoring will be required to ensure that the ecological integrity of the park is not being detrimentally impacted by the direction that is currently in place. In general, motor vehicles can be used for access to property and tenured land or hunting purposes, but not for recreational purposes.

There are further instructions in the legislation that these vehicles must be used on the approved road and trail system, once established. It is important to note, that off trail use of motor vehicles is not permitted for the general public (including retrieval of game). Exceptions to the off trail use are made for trappers and baitfish licence holders to access their licence areas for that specified purpose.

Kawartha Highlands Signature Site Park Act and Charter direction:

A person may operate a motorized vehicle or motorized snow vehicle in the park on the authorized road and trail system for one of the following purposes:

- for hunting purposes
- to access a park facility (on the most direct route from park entrance)

(*KHSSP Act*, Section 15 (2) & (3)).

Motor vehicles, except all terrain vehicles, cannot be operated on the approved trail system (*KHSSP Act*, Section 15 (4)).

A person may operate a motorized snow vehicle on the approved road and trail system (*KHSSP Act*, Section 15 (5)).

A person may operate a motorized snow vehicle on a body of water in the park that is covered with ice in order to engage in ice fishing (*KHSSP Act*, Section 15 (6)).

A person who holds a valid OFSC trail permit for a trail operated or maintained by the Ontario Federation of Snowmobile Clubs may, without charge, travel through the park without charge (*KHSSP Act*, Section 15 (7)).

A person may operate a motor vehicle or motorized snow vehicle anywhere in the park for purposes of park management activities or emergency services (*KHSSP Act*, Section 15 (8)).

Management Planning to address:

- Motor vehicle permitting system and fee structures

Motorboat Use

During previous public consultation on the future of the Kawartha Highlands, many people supported a "no motor" restriction on lakes beyond the cottage lakes (interior lakes). On lakes completely surrounded by park land, Ontario Parks can restrict motor use. On lakes where any private property exists, the restriction of motor use or horsepower size through regulation is a federal responsibility. Generally, restrictions on cottage lakes would need to be pursued by the cottage association through their municipality. Previously identified problems associated with boat caches throughout the area will also need to be addressed.

Kawartha Highlands Signature Site Park Act and Charter direction:	Management Planning to address:
Regulating the use of motorboats (including waterskiing) and personal water craft on lakes where there are private properties is federal jurisdiction. For restrictions on these waterbodies, the Management Advisory Board will assist local municipalities or individual cottage associations to examine (where appropriate) alternative approaches. Ontario Parks does not intend to apply for any federal restrictions on boating on lakes where there is private property (Charter, page 10).	• Motor boat controls, including possible horsepower limits, on lakes that are entirely surrounded by park land. • Direction on boat caching (when can this be considered acceptable) and associated permits required.

Aircraft Landing

Permits will be required for the landing of aircraft within the park. Management planning will address the specific details of implementation, such as establishing a permit system and determining authorized lakes for aircraft landing.

***Kawartha Highlands Signature Site Park Act* and Charter direction:**	Management Planning to address:
No person shall land an aircraft in the park unless they have paid a fee, hold a valid aircraft landing authorization and are landing in an area identified for that purpose (*KHSSP Act*, Section 16 (a)). Exception to the fee requirement only (still require appropriate authorization) is provided for private property owners or land tenure holders and their guests to gain access to these lands only (*KHSSP Act*, Section 13 (6)). Aircraft may be used for park management purposes or emergency services (*KHSSP Act*, Section 16 (b)).	• Permit system. • Lakes to be accessible to aircraft.

Private Hydro or Phone Line Installation

Concern raised during the previous consultations included the ability of those property owners that are entirely surrounded by the park or immediately adjacent to the park to be able to have hydro and telephone service in the future if it was not already available. Both of these utilities might require that lines or cables are installed on the park land adjacent to the properties. The Charter has provided assurances for these particular landowners.

Kawartha Highlands Signature Site Park Act and Charter direction:	Management Planning to address:
The installation of power or telephone lines across park lands to provide service to patented properties can also be authorized, subject to ensuring that the lines are constructed with minimal possible impact. Where possible, marine cables should be used to minimize the impact. (Charter, page 7).	• Protocol for reviewing applications for minimal possible impact and approval of installations.

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Figure 1: Regional Setting
Kawartha Highlands Signature Site Park

LEGEND

- Park Boundary
- Private Property Within
- Forest Reserve
- Provincial Park
- County Road
- Township of Galway Cavendish & Harvey
- Southern Boundary of Canadian Shield
- Population Centre
- Water Body
- Geographic Township Boundary
- Trent Severn Waterway
- Highway
- Township of North Kawartha

5 0 5 10 15
Kilometres

This map is illustrative only. Do not rely on it as be[illegible] precise indicator of routes, locations of features, nor as a guide to [illegible]ation.

Base derived from the Ontario Digital Topographic Database, Scale 1 : 10,000, Universal Transverse Mercator Grid Zone 17, North American Datum 1983, Canadian National Transformation.

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Ministry of Natural Resources
July 30, 2005

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Figure 1: Regional Setting, Kawartha Highlands Signature Site Park

Figure 1: Regional Setting
Kawartha Highlands Signature Site Park

LEGEND

- Park Boundary
- Private Property Within
- Forest Reserve
- Provincial Park
- County Road
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- Township of North Kawartha

5 0 5 10 15
Kilometres

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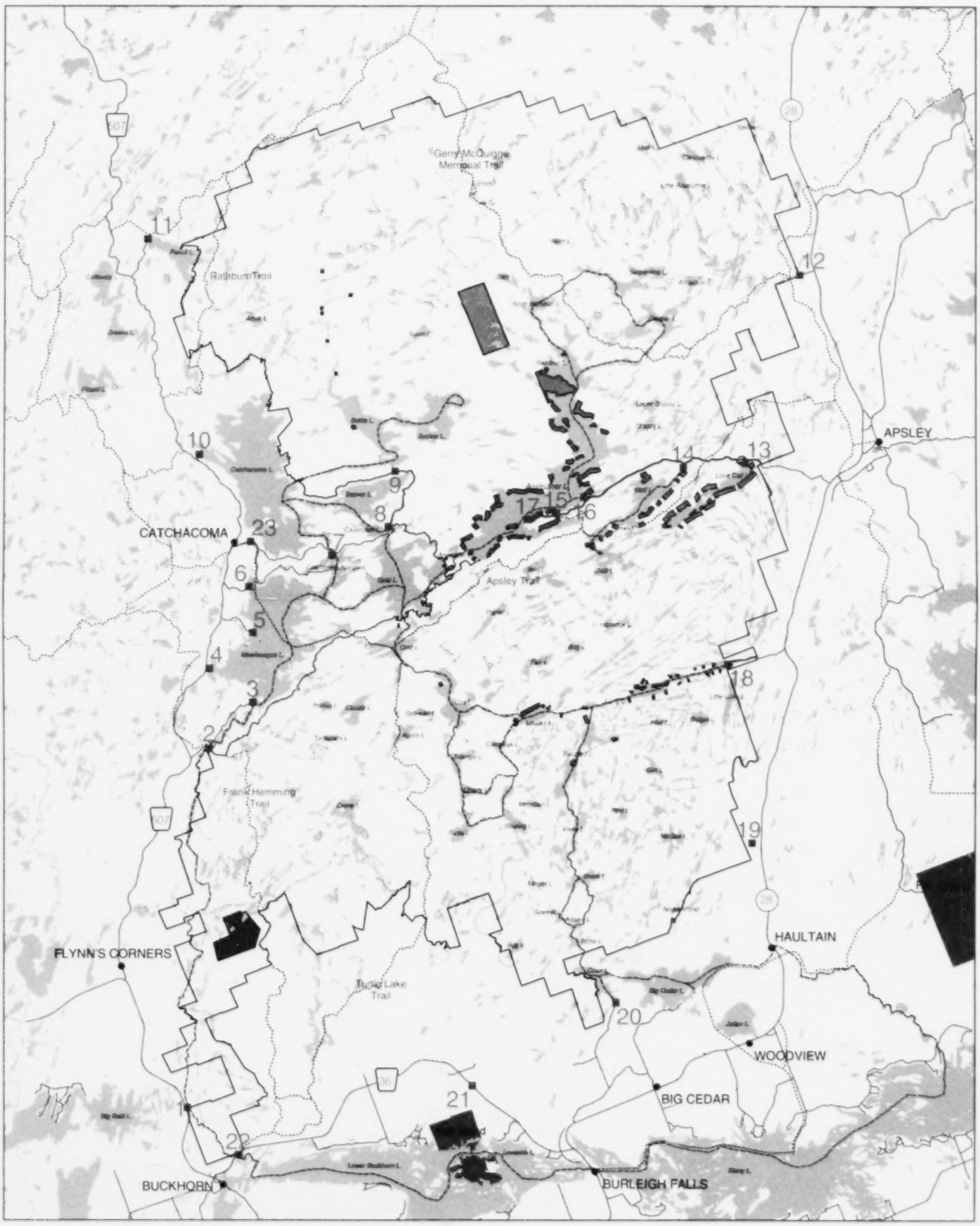
Figure 1: Regional Setting, Kawartha Highlands Signature Site Park

Figure 2: Access
Kawartha Highlands Signature Site Park



LEGEND

- Park Boundary
- Private Property Within
- Forest Reserve
- Provincial Park
- Water Body, Permanent
- River/Stream
- Current Access
- Canoe Route
- Portage
- Road
- Snowmobile Trail

1,500 0 1,500 3,000
Metres

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Figure 2: Access, Kawartha Highlands Signature Site Park

Figure 2: Access
Kawartha Highlands Signature Site Park

LEGEND

- Park Boundary
- Private Property Within
- Forest Reserve
- Provincial Park
- Water Body: Permanent
- River/Stream
- Current Access
- Canoe Route
- Portage
- Road
- Snowmobile Trail

1,500 0 1,500 3,000
Metres

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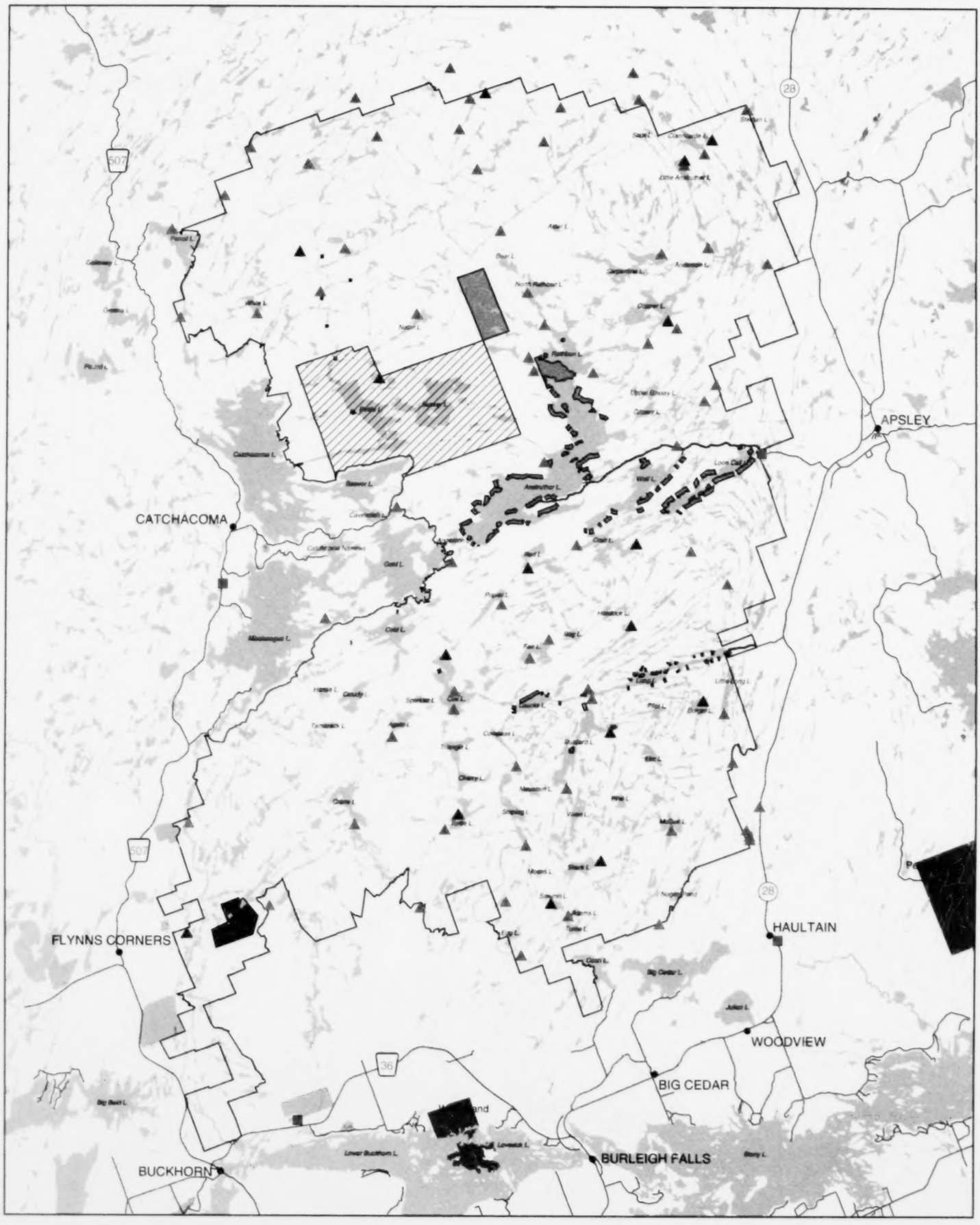
Figure 2. Access, Kawartha Highlands Signature Site Park

Figure 3: Land Tenure
Kawartha Highlands Signature Site Park



LEGEND

- Park Boundary
- Private Property Within
- Forest Reserve
- Water Body, Permanent
- River/Stream
- Provincial Park
- Pre-existing Kawartha Highlands Provincial Park
- Commercial Outpost
- Recreation Camp
- Trap Cabin
- Road
- Pit Quarry
- Landfill Site
- Transfer Station

1,500 0 1,500 3,000
Metres

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Figure 3: Land Tenure, Kawartha Highlands Signature Site Park

Figure 3: Land Tenure
Kawartha Highlands Signature Site Park
APSLEY
CATCHACOMA
Petroglyphs
HAULTAIN
FLYNNS CORNERS
WOODVIEW
BIG CEDAR
Wolf Island
BURLEIGH FALLS
BUCKHORN
LEGEND
Park Boundary
Private Property Within
Forest Reserve
Water Body, Permanent
River, Stream
Provincial Park
Pre-existing Kawartha Highlands Provincial Park
Commercial Outpost
Recreation Camp
Trap Cabin
Road
Pit Quarry
Landfill Site
Transfer Station
1,500 0 1,500 3,000
Metres
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Base derived from the Ontario Digital Topographic Database, Scale 1: 10,000, Universal Transverse Mercator Grid Zone 17, North American Datum 1983, Canadian National Transformation
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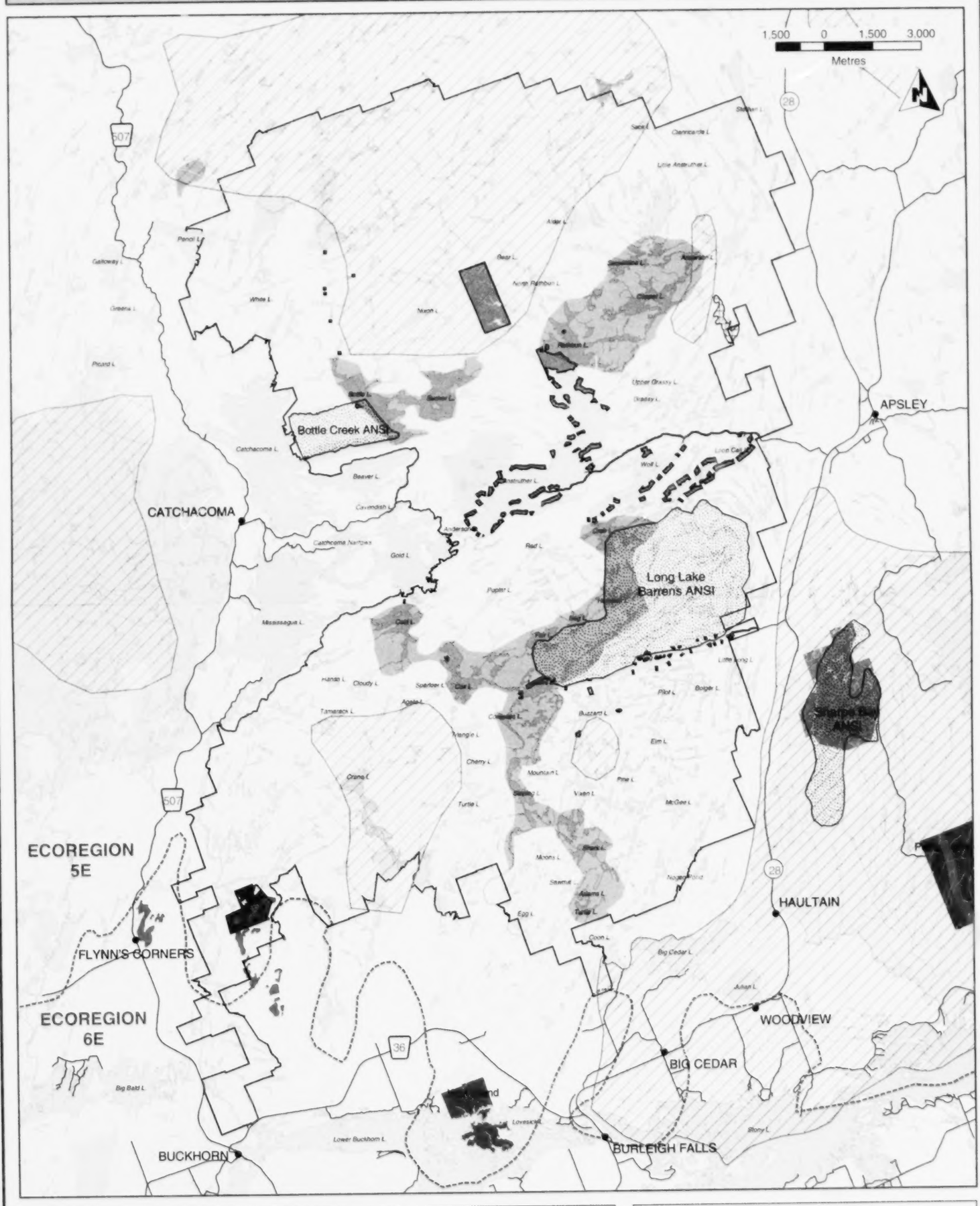
Figure 4: Significant Areas
Kawartha Highlands Signature Site Park



LEGEND

- Park Boundary
- Private Property Within
- Forest Reserve
- Provincial Park
- River/Stream
- Water Body, Permanent
- Road
- Ecoregion Boundary
- Sharpe Bay Fen Conservation Reserve
- Peterborough Crown Game Preserve
- Kawartha Barrens Enhanced Management Area
- Deer Wintering Area
- Deer Yard
- Moose Early Wintering Area
- Atlantic Coastal Plain Flora
- High Quality Bog or Fen
- Mature Forest
- Mature Forest/Swamp
- Old Growth Forest
- Area of Natural & Scientific Interest (ANSI)
- Alvar

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Figure 4: Significant Areas, Kawartha Highlands Signature Site Park

Figure 4: Significant Areas
Kawartha Highlands Signature Site Park

LEGEND

- Park Boundary
- Private Property Within
- Forest Reserve
- Provincial Park
- River Stream
- Water Body, Permanent
- Road
- Ecoregion Boundary
- Sharpe Bay Fen Conservation Reserve
- Peterborough Crown Game Preserve
- Kawartha Barrens Enhanced Management Area
- Deer Wintering Area
- Deer Yard
- Moose Early Wintering Area
- Atlantic Coastal Plain Flora
- High Quality Bog or Fen
- Mature Forest
- Mature Forest Swamp
- Old Growth Forest
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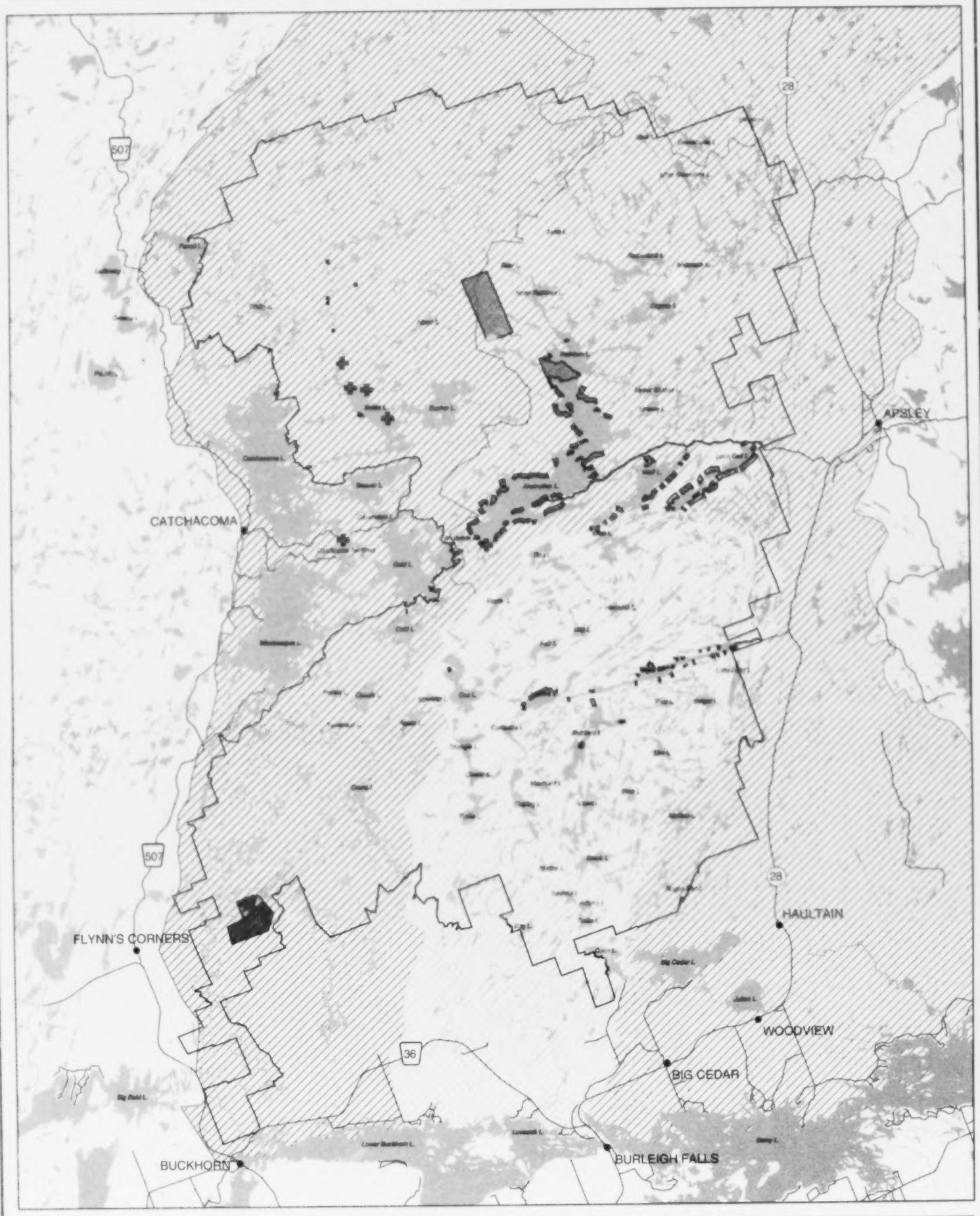
Figure 4: Significant Areas, Kawartha Highlands Signature Site Park

Figure 5: Watersheds
Kawartha Highlands Signature Site Park



LEGEND

- Park Boundary
- Private Property Within
- Forest Reserve
- Water Body, Permanent
- River/Stream
- Road
- Monitoring Station

Watershed

- Eels Creek
- Squaw River
- Anstruther sub unit of Mississagua R.
- Mississagua River
- Deer Bay Creek

1.500 0 1.500 3.000
Metres

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Base derived from the Ontario Digital Topographic Database, Scale 1 : 10,000, Universal Transverse Mercator Grid Zone 17, North American Datum 1983, Canadian National Transformation.

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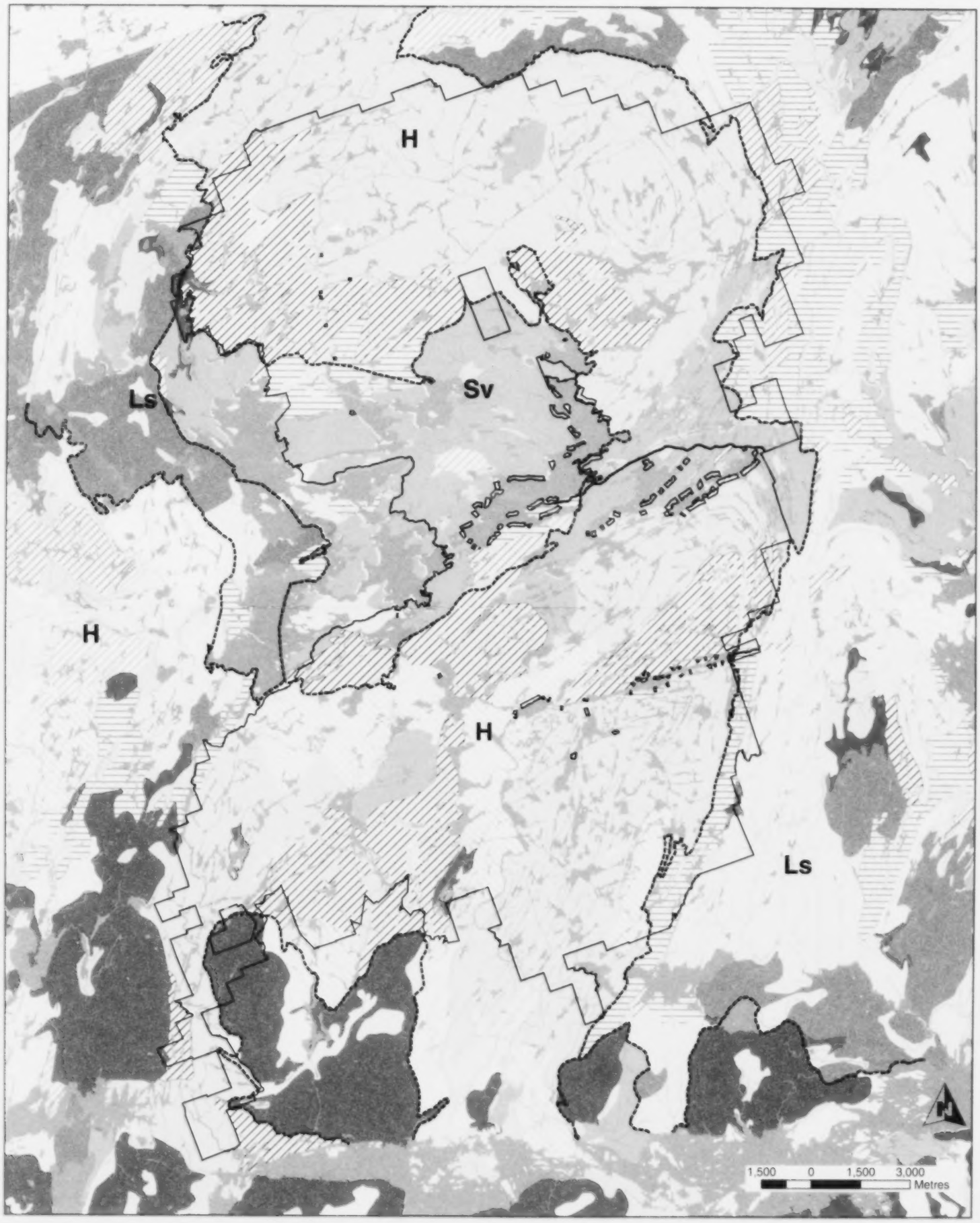
Figure 5: Watersheds, Kawartha Highlands Signature Site Park

Figure 6: Land and Soil Types
Kawartha Highlands Signature Site Park



Land and Soil Types

- Land Type
  - Ls - Limerick
  - H - Henvey
  - Sv - Sherborne
- RL - Rocklands
- Bls - Balmer sandy loam
- Drl, Fl - Douro loam and Farmington loam
- Cds - Chandos loamy sands
- Msl - Monteagle sandy loam
- Tws - Tweed sandy loam
- Msl Rl - Monteagle sandy loams with Rocklands
- Ms - Mallard sandy loam
- RL Msl - Rocklands with Monteagle sandy loam
- Wes - Wendigo loamy sand
- Ws - Wemyss loamy sand
- Water Body, Permanent
- River/Stream

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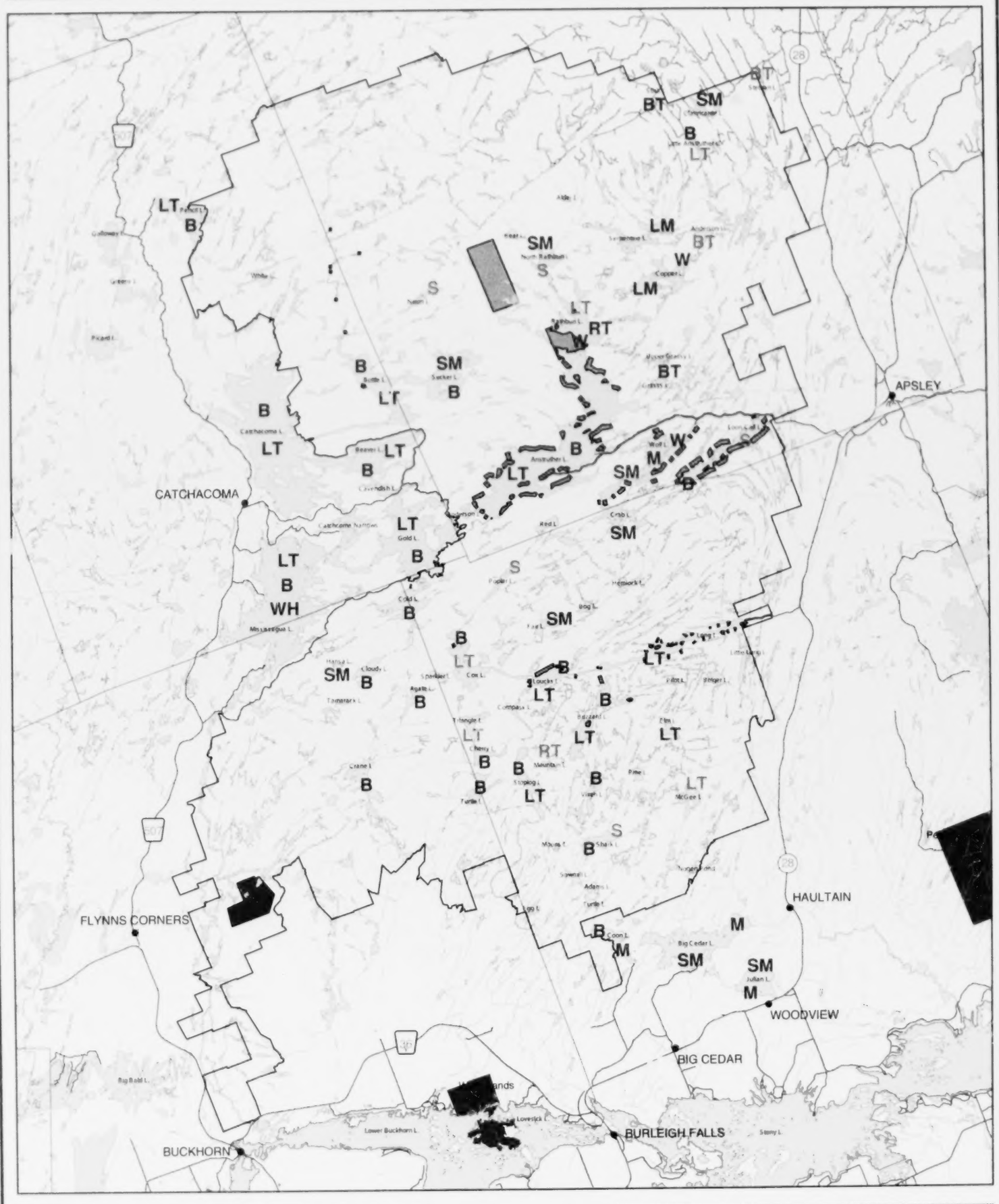
Figure 6: Land and Soil Types, Kawartha Highlands Signature Site Park

Figure 7: Sport Fish
Kawartha Highlands Signature Site Park



LEGEND

- Park Boundary
- Private Property Within
- Forest Reserve
- Water Body, Permanent
- River/Stream
- Provincial Park
- Sport Fish Species
- Currently Stocked Species

LT – Lake Trout
RT – Rainbow Trout
BT – Brook Trout
S – Splake
SM – Small Mouth Bass
LM – Large Mouth Bass
B – Bass (LM & SM)
W – Walleye
M – Muskie
WH – White Fish

1,500 0 1,500 3,000
Metres

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Figure 7: Sport Fish, Kawartha Highlands Signature Site Park

Figure 7: Sport Fish
Kawartha Highlands Signature Site Park

LEGEND

- Park Boundary
- Private Property Within
- Forest Reserve
- Water Body: Permanent
- River/Stream
- Provincial Park
- Sport Fish Species Currently Stocked Species

LT – Lake Trout
RT – Rainbow Trout
BT – Brook Trout
S – Splake
SM – Small Mouth Bass
LM – Large Mouth Bass
B – Bass (LM & SM)
W – Walleye
M – Muskie
WH – White Fish

1,500 0 1,500 3,000
Metres

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